DOCUMENT RESUME

ED 126 368 CE 007 699

AUTHOR Law, Charles J., Jr.
TITLE A Search for a Philosophy of Vocational Education.
PUB DATE 16 May 75
NOTE 71p.; A Paper presented at the Annual Meeting of State Directors of Vocational Education (Washington, D.C., May 12-16, 1975)

EDRS PRICE MF-$0.83 HC-$3.50 Plus Postage.
DESCRIPTORS *Educational Assessment; *Educational History; Educational Philosophy; *Educational Theories; *Historical Reviews; National Programs; State of the Art Reviews; *Vocational Education

ABSTRACT

In the light of the manifest need for a clear, concise, defineable philosophical base the author presents an historical review of vocational education in the United States, and questions the validity of its early beliefs and tenets in terms of the needs of today's society. Five chapters discuss the following topics: (1) the pressure for re-evaluation of the philosophy of vocational education programs and of program accountability in relation to Federal funding; (2) the historical search for a philosophical base, touching on: the Land-Grant College movement of Jonathan Baldwin Turner, the manual training philosophy of Calvin M. Woodward, the trade school movement, the 1963 Vocational Education Act, and the philosophies and opinions of John Dewey, Charles W. Eliot, Charles A. Prosser, Melvin L. Barlow, and other educators; (3) tentative philosophy based on five factors of vocational education considered in terms of a longitudinal historical perspective of vocational education as a function of formal education; (4) the salability of theoretical versus concrete skills; and (5) Leon M. Lessinger's theories regarding curriculum development. A summary presents five conclusions. Lessinger's paper, Educational Stability in An Unstable Technical Society, is appended. (LH)

****
* Documents acquired by ERIC include many informal unpublished *
* materials not available from other sources. ERIC makes every effort *
* to obtain the best copy available. Nevertheless, items of marginal *
* reproducibility are often encountered and this affects the quality *
* of the microfiche and hardcopy reproductions ERIC makes available *
* via the ERIC Document Reproduction Service (EDRS). EDRS is not *
* responsible for the quality of the original document. Reproductions *
* supplied by EDRS are the best that can be made from the original. *
****

ED126368

A SEARCH FOR A PHILOSOPHY OF

VOCATIONAL EDUCATION

By

Charles J. Law, Jr.
State Director
Division of Occupational Education
Department of Public Instruction
Raleigh, North Carolina

PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY

Charles J. Law, Jr.

TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE NATIONAL INSTITUTE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER.

Presented at the

Annual Meeting of State Directors of Vocational Education
Washington, D. C.
May 12-16, 1975

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Not to be Reproduced or Quoted Without Permission

The points of view or opinions expressed in this document do not necessarily represent the official position or policy of the North Carolina Department of Public Instruction or the North Carolina Board of Education.

CONTENTS

Chapter		Page
	Prologue	*ii*
I	*NEED FOR REASSESSMENT OF ROLE OF VOCATIONAL EDUCATION*	*1*
II	*A HISTORICAL SEARCH FOR A PHILOSOPHICAL BASE*	*9*
III	*A TENTATIVE PHILOSOPHY WHICH VIEWS VOCATIONAL EDUCATION AS A FUNCTION OF THE EDUCATION PROCESS AS WELL AS A FUNCTION OF THE SOCIO-ECONOMIC PROCESS*	*36*
IV	*CONCEPT OF TRUE SALABILITY OF SKILLS*	*47*
V	*UTILIZING THE CONCEPT OF VOCATIONAL EDUCATION AS A FUNCTION OF THE EDUCATIONAL PROCESS IN PLANNING CURRICULA*	*51*
VI	*SUMMARY*	*57*
	APPENDIX	*58*

Prologue

Rationale

I would like to specify very carefully my reasons for approaching the subject of this paper. I am a firm believer in vocational education. I am not an obedient servant to what seems to be an insidious and concurrently, a vitriolic attack on vocational education. I am a believer, however, of the necessity to continually subject all aspects of education, including vocational education, to the hard cold eye of logic. In addition, I believe that evolution from within is preferable to defense against revolution countenanced by forces from without.

If I seem to take to task our basic beliefs and tenets, I do so because I believe that those of us who practice vocational education should be responsible for and excited about exploratory and, perhaps, corrective surgery on the heart, bone and sinews of our program. At least, we stand a better chance of intelligently wielding the knife, if a knife needs to be wielded.

If I seem to attack the early leaders of our program, I do so not out of disrespect for their position in their time. I simply question the validity of their tenets in today's society.

I call for a national debate of the dimensions of the early 1900s led by the practitioners of the art. Such debate should not center on defending our practices but should instead re-evaluate who we are, what we are, and most important of all, why we exist.

In my opinion, it is only when we possess such a revitalized rationale that we will be able to serve the loosely defined purposes which all of us tend to think we believe.

My theses are:

1. In order to withstand ferment, vocational education needs to have a clear, concise, definable philosophical base.

2. The philosophical bases upon which vocational education loosely operates are a conglomerate of beliefs; indiscriminately interwoven; parts of which are mutually exclusive and often contradictory.

3. The most recent attempt to discuss the philosophical base of vocational education, i.e., the Fourth A.V.A. Yearbook entitled The Philosophy for Quality Vocational Education Programs deals with second level principles; not philosophy.

4. A pragmatic, philosophical base for administering programs of vocational education is utilized but has never been refined nor even clearly defined.

5. A possible philosophical base for vocational education would be to consider that although vocational education has a socio-economic function (training for jobs), it also has an educational function when it is considered to be methodology as opposed to content.

6. A new approach to curriculum design can emerge utilizing this methodological concept.

It is hoped that those who read this paper will do so with an open mind. The reader should recognize that my intent is to raise the right questions. The validity of the answers derived in this paper can and should be challenged. In so doing, however, my purpose will be served for the debate will have begun.

C.J.L.

NEED FOR REASSESSMENT OF ROLE OF VOCATIONAL EDUCATION

Introduction

". . . . The unique fact about our own civilization is that if it is to achieve and manifest a characteristic culture, it must develop, not on top of an industrial and political substructure, but out of our material civilization itself. It will come by turning a machine age into a significantly new habit of mind and sentiment, or it will not come at all . . . It is a qualitative question. Can a material, industrial civilization be converted into a distinctive agency for liberating the minds and refining the emotions of all who take part in it? . . . A 'humanism' that separates man from nature will envisage a radically different solution of the industrial and economic perplexities of the age than a humanism entertained by those who find no uncrossable gulf or fixed gap. The former will inevitably look backward for direction; it will strive for a cultivated elite supported on the backs of toiling masses. The latter will have to face the question of whether work itself can become an instrument of culture and of how the masses can share freely in a life enriched in imagination and esthetic enjoyment. This task is set not because of sentimental 'humanitarianism,' but as the necessary conclusion of the intellectual conviction that while man belongs in nature and mind is connected with matter, humanity and its collective intelligence are the means by which nature is guided to new possibilities."[1]

This clear, concise statement by John Dewey on the vocational-liberal studies issue is as relevant today as when enunciated; and, in fact, it takes on new urgency. As American education finds itself in the throes of massive upheaval and conflicting ideology, the place of vocational education in the educational cosmos has come under renewed pressure for re-evaluation.

Increased Pressure for Accountability

One has only to turn to the recent General Accounting Office Report entitled "What is the Role of Federal Assistance for Vocational Education" to become seriously concerned regarding the past, present and future of that which we know as Vocational Education.

---

[1]John Dewey, Individualism Old and New, Capricorn Books, New York, 1962, pp. 124-126, Arthur Wirth, The Vocational-Liberal Studies Controversy Between John Dewey and Others, St. Louis, Missouri, September, 1970, page 261. *(emphasis mine)*

Among the findings and conclusions of the Report were the following:

". . . The use of Federal funds has not been adequately evaluated at the Federal, State or local levels. Occupational Education has not provided adequate guidance to help insure that the purposes invisioned by the Congress would be accomplished."

Planning for use of funds . . .

Greater attention to systematic, coordinated, comprehensive planning at national, State and local levels would improve the use of Federal funds and better insure that vocational education is provided in a manner that best serves student and community needs.

Use of training resources

States and local agencies have not always considered the range of existing training resources which could provide expanded training options to a larger number of people.

Relating training to employment

Changing manpower requirements need to be better addressed in many secondary and postsecondary occupational programs supported by Federal funds. Students often are enrolled in traditional courses and are not always able to find employment in fields for which they have been trained.

Reactions to G.A.O. Report

Kenneth J. Rabben appropriately stated the reaction to such findings and recommendations:

"Shock waves from what seems to be a devastating indictment by Uncle Sam's respected watchdog over Federal expenditures and programs are being felt on Capitol Hill, at the U. S. Office of Education, in state education departments, and by state and local school boards, particularly in seven states in which the audit was made. Press reports have generated unfavorable publicity for vocational education."[2]

---

[2]Kenneth J. Rabben, GAO Report on Voc Ed Stirs Controversy, American Vocational Association Journal, March, 1975, page 36.

William F. Pierce, Deputy Education Commissioner for Occupational and Adult Education views the report in a very calm, intelligent manner, as he says:

> "We should not be defensive. We have to do a better job and we will when congress tells us more specifically what it wants. It is more healthy for us to stop the knee-jerk reactions, look at what the report tells us and the guidance it provides, and to improve vocational education."[3]

Also, Carl Lamar, Assistant Superintendent for Vocational Education in the State of Kentucky, offers wise counsel to those who would become too defensive about the Comptroller General's Report as he says:

> "The Comptroller General's report submitted to Congress on December 31, 1974, needs to be analyzed carefully by the leadership in vocational education and others interested in the growth of the program. The Report deserves to be assessed in a positive and constructive manner, but certain factors should be kept in mind."[4]

He astutely delineates some of the fallacies of the Report but comes back once again to the assertion that:

> "There is no question that such a review should strive to identify the existing barriers to a comprehensive vocational program. The questions the GAO review study set for itself appear to be relevant to vocational education as it assumes accountability for its programs. The five basic questions the GAO attempted to answer are these:
>
> 1. What role does the federal dollar play?
> 2. How is vocational education planned?
> 3. How are federal vocational education funds distributed?
> 4. How are training resources used?
> 5. Is training related to employment?

---

[3]Ibid., page 38.

[4]Carl Lamar, A state director's response to the Comptroller's Report, American Vocational Association Journal, April, 1975, page 42.

"Certainly these questions are fair enough. If thoroughly researched they should produce objective answers that would be helpful in the future development of vocational education programs. One cannot find much to critize in the purpose of the review and the plan GAO developed for conducting it."[5]

Why did not Vocational Educators Raise These Questions?

I do not propose we accept blindly the condemnation of the Report nor respond in a subservient manner. I merely wish to call critical attention to the fact that real questions have been asked and must, in turn, be answered. To pretend the questions have not been raised or to retreat behind the battered fortress of claiming our critics "don't understand us" will in no way nullify the questions nor ease the pain of not having concrete answers.

I believe that these and other questions concerning vocational education should have been raised internally several years ago. Yet, it seems, we have waited for a "governmental watchdog" to raise the questions for us. Admittedly, the questions may not have been fairly answered nor the results properly interpreted, but one is still faced with the stark reality that it has always been both the prerogative and the responsibility of leading vocational educators to raise these questions. History has proven that leadership falls to those who "ask the right questions," and not to those who have all the answers. Why have we not asked the "right questions"?

Earlier Questions About Vocational Education

Serious questions have been raised earlier concerning the validity of vocational education programs. For example, in a highly controversial

---

[5]Ibid., page 44.

document entitled Work in America, a Task Force appointed by the then Secretary of the Department of Health, Education, and Welfare, Elliot L. Richardson, began its work by quoting Schrank and Stein:

> "Knowledge, not skill is the critical factor in modern technology. For example, a craftsman who can square off a piece of steel with a hand file may be a true artisan; but his artisanship is useless on a numerically-controlled machine tool which needs someone who understands a system."[6]

Working with this postulate as a base, the Task Force then took what appeared to be a vicious swipe at vocational education when it reported:

> "From the evaluations of vocational education, then, it appears that a very expensive form of education . . . has a very low utility. Only a small proportion of entry-level jobs for high school graduates require the specific training and skills offered by vocational education; vocational graduates more often than not take jobs for which they were not trained; their unemployment records are not better than other high school graduates, except those in the general curriculum; and their pay isn't better. Most of the literature on vocational training in high schools arrives at the same negative evaluation: technical training in schools is based on an out-moded assessment of future needs. Students are trained without any real knowledge of how they might apply their skills in the future. All they have is an increasing recognition that the technological concepts they are learning are outdated or will be before they can use them."[7]

Did we internalize such questions and deal with them in a logical manner? No, the reaction of vocational educators to this attack was predictable. We were enraged, indignant and defensive. We simply retreated to the high, ecclesiastical ground of "just another critic from general education who doesn't know what he's talking about."

Again, let me explain. There was no need for vocational education leaders to accept carte blanche this scathing but convincing onslaught; however, should

---

[6]Special Task Force, Work in America, Secretary of Health, Education, and Welfare, December, 1972, page 27.

[7]Ibid., pp. 112-113. (emphasis mine)

we have automatically "tuned out" these hard questions? I think we failed to grow from this experience because we responded with a series of our own questions which were the "wrong questions."

The Wrong Questions

As vocational educators concern themselves with the endless series of charges which seem to demand that we be defensive, we always seem to ask ourselves a series of intriguing questions:

1. Why does the Congress, so long receptive to the pleas of vocational education, seem no longer to be our friend?

2. Does the Congress not understand our plight and the need for strengthening vocational education and keeping "true vocational education" from being "watered-down" by well-meaning but misguided administrators?

3. Have some of these "well-meaning but misguided" administrators constituted themselves into a lobby with the potential potency of our own vocational lobby?

4. If so, what facts can we compile immediately in order to repudiate this latest, most serious attack against our system?

5. If we cannot repudiate with facts (which are there, if we could but properly massage our data), can we bring political pressure to bear to the point that such charges will be seen for what they obviously are (i.e., assertions made by the uninformed who may have had some personal antagonism to vocational education, in the first place) and, thus move on to face the next attack?

I stand to be repudiated for the slightly malicious listing of questions which seem to be our basic credo for the salvation of vocational education; but the careful reader will garner far more than a grain of truth in this inventory; and, sadly so, for surely there must be a better way to respond.

Call for an Internal Re-examination of Our "Philosophical Base"

That "better way" is implied by Lamar and Pierce. It calls for a national internal re-examination of our philosophical base. Is it not true that we have sparred for a half-century with any and all opponents (Labor Department, Chief State School Officers, Industrial Arts, C.E.T.A., Career Education, to name but a few) with never a knock-out blow being delivered? This makes no sense and one wonders why the system appears incapable of doing much more than clinging to the ropes unless we are truly unsure of our base.

Vocational educators are intelligent persons. Our abilities at Management by Objectives are at least as good as those of the average administrator of educational programs. Our belief in involvement of people, both politically and educationally, is sound. Our attention to assessment of student needs; planning to meet those needs; implementing innovative, individualized curricula; evaluating the results of programs; and placement and follow up of students is good. If we can do these things, why can we not be more creative and decisive in our attempts to explain ourselves? Why am I forced to rely on such tired cliches of defense as the following?

> "We must have vocational education in our secondary schools because without it students will drop out and never reach post-secondary education where, admittedly, they might profit most from vocational education."

I am forced to rely on such overused, outdated rhetoric simply because I have no concise, consistent philosophical base upon which to draw. I am forced to recognize the validity of a statement made by Carl J. Dolce

as Dean of the School of Education at North Carolina State University, when he postulated that "Vocational Education as a program has no explicit, adequate, definable philosophical base."

I hereby call for a national debate on the role of vocational education in the educational structure to be led by the best minds in vocational education today. Such debate should not center on defending our practices but should, instead, re-evaluate who we are, what we are doing and most importantly, why we exist.

II

A HISTORICAL SEARCH FOR A PHILOSOPHICAL BASE

(For Chapter II, I have drawn heavily from the research of Arthur Wirth in a paper entitled The Vocational-Liberal Studies of Controversy Between John Dewey and Others (1900-1917)

There are those who would consider statements made in Chapter I as threatening to vocational education. Others would conclude if a state director of vocational education admits to possessing no concise, coherent philosophical base, he is in the wrong place or, at best, misguided. To those who would chide me, I raise the question, "Where will you send me for that sound, precise philosophical base upon which you draw?"

I believe that a careful historical review will prove that the philosophical bases upon which vocational education loosely operates are a conglomerate of rationales, indiscriminately interwoven, parts of which are mutually exclusive and often contradictory.

Land-Grant College Philosophy

Will you send me to the philosophy of the Land-Grant College movement as enunciated by Jonathan Baldwin Turner, a leader of the reform movement from Illinois College? Throughout the mid-1800s, he pleaded his case in a speech entitled "A Plan for a State University for the Industrial Classes." This speech included such pragmatic philosophy as:

> "All civilized society is, necessarily, divided into two distinct co-operative, not antagonistic, classes: - a small class, whose business is to teach the true principles of religion, law, medicine, science, art, and literature; and a much larger class who are engaged in some form of labor in agriculture, commerce, and the arts."[8]

---

[8]Jonathan B. Turner, University of Illinois Library, page 371, Arthur B. Mays, The Concept of Vocational Education in the Thinking of the General Educators, 1845-1945, Bureau of Educational Research, Bulletin No. 62, Arthur Wirth, The Vocational-Liberal Studies Controversy Between John Dewey and Others, St. Louis, Missouri, September, 1970, page 40.

Labeling the former class as Professional and the latter as Industrial, he contended that the Industrial Class would :

> ". . . want and ought to have, the same facilities for understanding the true philosophy - the science and art of their several pursuits, (their life business) and of efficiently applying existing knowledge thereto and widening its domain in their pursuits."[9]

He did not hold in high esteem schools which immersed students only in books.

> "The most natural and effective mental discipline possible for any man arises from setting him to earnest and constant thought about the things he daily does, sees and handles, and all their connected relations, and interests. The final object to be attained, with the industrial class, is to make them Thinking Labourers; while of the professional class, we should desire to make Labourious Thinkers."[10]

Some of our evolving philosophy seems more similar to that of Turner than to that of subsequent writers.

Manual Training School Philosophy

Is it the manual training philosophy of Calvin M. Woodward? Woodward decided sometime in the late 1860s that the engineering students at Washington University should construct models made of wood to illustrate certain mechanical principles. The students' lack of ability in using hand tools caused the later development of a workshop under Woodward's direction, wherein such activities could take place.

Woodward devised a methodology of combining theory and practice with the belief, according to Barlow

---

[9]Arthur Wirth, The Vocational-Liberal Studies Controversy Between John Dewey and Others (1900-1917), St. Louis, Missouri, September, 1970, page 9.

[10]Ibid., page 14.

> "that the things studied and taught had immediate and intrinsic values, and that a student could not understand a process or an experiment until he had performed it."[11]

Whereas Woodward viewed the efforts of several European countries to establish practical educational programs as appropriate for those class structures, he could not bring himself to believe that American culture should adopt such a posture. He felt that such a structure would arbitrarily channel individuals and this should not be in America where "every boy is a natural candidate for the office of president, and no one shall dare to place any bounds to his aspirations and his social possibilities."[12]

Woodward felt that manual training had real potential for teaching according to the prevalent psychological rationale of the day. In order to placate his harshest critics who looked with disdain upon manual training, he said that the

> ". . . first and greatest faculty to be trained is sense-perception . . . knowledge and experience and memory and generalization are necessary to the operations of logic, and manual training is particularly strong in furnishing the knowledge and experience, in establishing the major premises essential to logical reasoning. Tool instruction and tool practice are full of meaning, and should always be strictly logical."[13]

His greatest excitement was raised, however, by the potential of manual training for

> ". . . cultivating a capacity for executive work, a certain power of creatorship. Every manual 'exercise' involves the execution of a clearly defined plan. . . however, at proper

---

[11]Melvin L. Barlow, History of Industrial Education in the United States, Charles A. Bennett Co., Inc., Peoria, Illinois, 1967, pp. 34-36.

[12]Calvin M. Woodward, The Manual Training School, Boston: D.C. Heath and Co., 1887.

[13]Calvin M. Woodward, Manual Training in Education, (New York: Scribner & Welford, 1890), page 204.

> times, . . . pupils are set to informing and executing their own plans . . . Memory, comparison, imagination, and a train of reasoning -- all are necessary in creating something new out of old. This power of intervention, of course, is the highest active power of intellect of which we are capable."[14]

Again, I believe there is much need to reassess such a rationale and utilize it for future direction.

The Trade School Philosophy

Shall I study the leaders in the trade school movement for my philosophy? It is in this section that I call for a major re-evaluation. Vocational education owes much to these leaders and organizations. However, I believe a careful analysis will convince a serious student of our problems that:

1. Our programs of today do not operate on these philosophies but rather on our own evolving concepts, and
2. To continually accept and espouse such original theories in light of the problems of today, without a re-evaluation, may prove to be a fatal mistake.

Early Support by Industry

The major socio-economic-political block which favored this movement was the National Association of Manufacturers, and subsequently, the National Society for Promotion of Industrial Education. According to Arthur Wirth, the mandate of those organizations was taken from a statement of Thomas B. Egan, Chairman of the first organizational meeting of N.A.M. to the effect that:

---

[14]Ibid., page 206

". . . the prosperity of any locality was dependent upon the prosperity of businesses in it; and therefore, the proper test for any proposed public policy was whether it would be good or bad for business."[15]

Wirth concluded that:

"The men who came together to form the new Manufacturer's Association were motivated by the clear desire to survive in the face of economic depression. Their interest in education emerged as they made a broad-based analysis of the causes of their predicament and formulated a coordinated program of policies to overcome obstacles to progress."[16]

The National Association of Manufacturers established a Committee on Industrial Education to recommend action to meet such needs.

"The first detailed report of the Committee on Industrial Education was presented in 1905 by its chairman, Anthony Ittner . . .

"Ittner said that the schools with their impractical and boring programs, failed to meet the needs of ordinary boys. Furthermore the apprenticeship system, which had once prepared youth for work, had nearly broken down as a result of changing industrial conditions and the obstructionist attitudes of the unions. Manual training and technical schools were fine for the handful who attended them, but they failed to reach the vast majority. Ittner's report asserted bluntly: 'To authorize and found and organize trade schools in which the youth of our land may be taught the practical and technical knowledge of a trade is the most important issue before the American people today.'[17]

The eyes of the leaders of industry were attracted to the schools of Germany, their leading competition for industrial markets of the world. Members of the N.A.M. began to advocate schools of this type for America. Wirth states:

"In the German example, they saw a complete system of schools tailored in mirror-image fashion to the skill graduations required by industrial modes of production. Furthermore, it was

---

[15]in Wirth, page 32.

[16]Ibid., page 32.

[17]Ibid., page 40.

a system of industrial education which made use of the equipment of industry, so that school costs could be held down. As American observers saw them, the German schools produced not only skilled workmen, but workers who were content in their jobs and loyal to the economic and political system. The message seemed clear. Schools in the United States had to be patterned immediately after this model if American industry were to meet the challenge of German competition."[18]

"The instruction in these . . . schools should be 'exceedingly practical;' a shop atmosphere should permeate all work in the school. Courses should concentrate on industry. Mechanical drawing, shop mathematics, and hand work such as pattern-making, molding, or machine-shop work should be taught in connection with the making of practical objects like tools, gasoline engines, or benches. For girls, academic instruction should be related to the making of dresses, hats, baked goods, and similar products.

"Courses in citizenship should be included 'to make an industrial worker who is a good citizen, wise as to his rights and obligations.' Statements on this subject were left at a very general level.

"The vocational schools should be administered jointly by practical men from the vocations and educators. N.A.M. members were skeptical of 'impractical education.' They felt that manual training had been diverted from its industrial purposes by the 'culturists,' and they were determined not to let that happen again."[19]

Interestingly enough, a suggestion patterned on successful administrative arrangements in Germany was also made of which most of us may not be aware:

"Up to fifteen years ago the continuation schools of Germany were under the Department of Education, but they found that they never got practical educators until they took it away from that department and put it into the Department of Commerce and Labor.

"As a result, it was said, 'Germany has moved twenty-five years ahead of us.' The ideal was thus projected that a new system of schools for the majority of American children should be administered not by educators but by men of business in collaboration with representatives of labor."[20]

---

[18] Ibid., page 57. (emphasis mine)

[19] Ibid., page 52.

[20] Ibid., page 53. (emphasis mine)

(If our forefathers preached such strategy, why are we surprised now that C.E.T.A. is administered by the Department of Labor?)

The Educator's Dispute Among Themselves

Obviously, the Trade School Movement could not be undertaken without the assistance of educators. Many leading educators of the day entered the battle lists and were heard.

Frank Tracy Carlton. Carlton, a professor of Economics and History at the Albion College in Michigan made very coherent observations on the issues of the time. Again, according to Wirth

> "Carlton shared the general concern of reformers to find the key to progress. . . . He shared the new inclination to trace the sources of social change to economic factors. Thus, he held the 'social progress' is vitally and intimately connected with modifications in the methods of doing the world's work.
>
> "He acknowledged industrialization as the source of change but argued that men have tended to be unaware of two different kinds of consequences flowing from it. On the one hand, he said the world of the twentieth century was being transformed into one vast neighborhood. New means of communication could help men free themselves from ancient parochialisms and open the possibilities for enriched human relationships. On the other hand, the specialization of work in industry tended to confine workers' lives within very narrow limits: 'occupations have been specialized and subdivided until the life of the individual is cramped.'"[21]
>
> "The proper task for modern men, said Carlton, is to acknowledge the reality of these two potentialities of industrialization - the negative tendency to dehumanize men and the positive one to open new dimensions of human development. Only when men saw

---

[21]Frank T. Carlton, The Industrial Factor in Social Progress, N.E.A. Report, 1910, page 8, in Arthur G. Wirth, page 132.

clearly what the alternatives were could they frame policies to resist the one and support the other.

". . . Under contemporary industrialism, 'the home was shorn of its industry and playground and the shop of its apprenticeship system.' The result was one that the reformers never ceased repeating: that the school was now forced to offer services which previously had been taken care of by other institutions. Pedagogically, schools were now obligated to include not only verbal training but the 'doing' kinds of learnings. Thus shops, laboratories, gardens, and kitchens were finding their way into schools."

Carlton admitted that fundamental differences of opinion divided people over the purposes of the public schools. These differences were manifest in the debate over how the schools should respond to industrialization.

"Today one class of men who are insistently urging that the public school emphasize industrial and trade education, do so because they wish an increased supply of workers who are mere workers or human automatons. Many influential employers in the United States are demanding in no uncertain tones that the public schools be utilized to turn out narrowly trained industrial workers who may become passive links in the great industrial mechanism of the present age. Systematization and specialization are the favorite watchwords of this class. The application of factory methods to the school is demanded in the name of efficiency and economy. Standardization, not individual treatment, is the ideal of the business man.

"Formerly, Carlton said, manufacturers had opposed manual training when it was a form of general education because of its cost. Now, when the industrialists needed skilled workers, they wanted to turn public education into schools for apprentices.

"There are other people though, continued Carlton, who stand for the position that 'the public school system should train efficient workers who are also thinking men and women capable of enjoying art, literature, and leisure, and who will be able to intelligently consider the political and social problems which will inevitably arise in the twentieth century.' They demand that a 'well-rounded development be given each child, and that each student be prepared for useful and efficient work in the community.'[22] The two views are almost diametrically opposed, said Carlton; but the difference is that the first group is agreed on its goals, while the second group remains divided on the proper scope of educational programs.

---

[22]Ibid., pp. 12-13, in Wirth, pp. 133-135.

"Carlton urged that care be taken about how industrial education would be introduced into the schools. It should serve to counter the evils of specialization which could diminish men.

> Vocational training must be indissolubly linked with other forms of training which will broaden the outlook of the student, which will make him a citizen as well as an efficient worker with hand or brain. The aim of modern education should be, if the aim be anything more than the production of a nicely articulated industrial system, to produce men, not machines."[23]

Industrial change forced educators to review all aspects of their programs. The value issue raised by Carlton had to be considered. My question is, what implications do the theories of Carlton have for us today?

Charles W. Eliot. Another educator of stature, Charles Eliot, President of Harvard University entered the foray in 1908. In an address to the N.S.P.I.E. Convention of 1908, he called for the introduction of industrial education into the public schools. He said industrial education

> ". . . ought to mean trade schools, and nothing but trade schools; that is, schools directed primarily and expressly to the preparation of young men and women for trades[24] . . . These would be new schools, separate from the existing public schools, and should have a different role from the Manual Training or The Mechanic Arts High Schools. Eliot accepted manual training as a welcome addition to either the elementary or the secondary curriculum but said it 'is for culture, not for skill.' The new Trade Schools 'should produce not foremen or managers, except as skilled workmen may grow up to these positions, but actual journeymen for the trades. This is the object of industrial education.'"[25]

---

[23]Ibid., page 13, in Wirth, pp. 135-136.

[24]Charles W. Eliot, Industrial Education as an Essential Factor in Our National Prosperity, N.S.P.I.E. Bulletin, No. 5, 1908, page 9, in Wirth page 139.

[25]Ibid., page 11, in Wirth, page 140.

> "We live in a new world, Eliot proclaimed. 'Nothing whatever in our country is now done as it was done fifty years ago.' Science has changed the world of work so that a great variety of complicated occupations have come into being which are based on applied science. The results have profound implications for approaches to education and industry. 'We must get rid of the notion that some of us were brought up on, that a Yankee can turn his hand to anything. He cannot in this modern world: he positively cannot.' Furthermore, we must disabuse ourselves of any misconception that democracy means that children are equal. 'There is no such thing among men as equality of natural gifts, of capacity for training, or of intellectual power.'" [26]

> "The proper stance, said Eliot, was to recognize that special kinds of education were needed for the different levels of specialized skills required in industrial society."[27]

Though I would agree with Eliot's rationale for the period 1900-1920, do we still believe that ultimate specialization is the answer?

Bagley's Concept of Social Efficiency. William C. Bagley also had profound influence on the movement with his concepts of social efficiency.

> "Social efficiency is the standard by which the forces of education must select the experiences that are impressed upon the individual. Every subject of instruction, every item of knowledge, every form of reaction, every detail of habit, must be measured by this yardstick."[28]

Do you, the reader, believe that social efficiency is the only yardstick by which we measure success?

A Leading Administrator Speaks Out. Andrew S. Draper, Commissioner of Education of the State of New York, argued in 1908 at an NEA Convention that:

---

[26]Ibid., page 13, in Wirth, page 140.

[27]Wirth, page 140.

[28]William C. Bagley, The Educative Process (New York: The Macmillan Company, 1905), page 60, in Wirth, page 184.

". . . school programs were needed to meet particular needs, whether those needs are high or low, academic, professional, commercial, agricultural, or manufacturing."[29]

"In another address to the same convention, he argued for separate public trade schools: 'a new order of schools because the new schools ought to be sharply distinguished from any schools that are known in America.' Their aim, he said, should not be 'to quicken the mentality nor to develop culture . . . The "culturists" are not to appropriate these new schools.' Furthermore, they should not be designed to develop engineers or foremen. 'The new schools,' Draper insisted, 'are to contain nothing which naturally leads away from the shop. They are to train workmen to do better work that they may earn more bread and butter.'[30] Draper wanted additional specialization even within the new system: one class of schools to train all-around mechanics for the new factories where each workman is 'part of an organization, and where much machinery is used' to be called "factory schools;"' another class of schools to train mechanics who worked independently with their own tools, to be called "trade schools." Technocratic doctrine had found a convert in the New York Commissioner of Education."[31]

Charles A. Prosser. Ultimately Prosser became the most articulate and forceful spokesman for what was soon to become known as vocational education. Prosser defined

". . . vocational education so that it would accommodate only specific job training programs. He was fond of quoting a friend, Charles R. Allen: 'The purpose of vocational education is to help a person secure a job, train him so he can hold it after he gets it, and assist him in advancing to a better job.'[32] Vocational education was, in brief, 'training for useful employment' and nothing else.

Prosser insisted that all of vocational content must be specific and that its source was to be found 'in the experience of those who have mastered the occupations.' The content must come from the minds

---

[29]Andrew S. Draper, Desirable Uniformity and Diversity in American Education, National Education Association, Addresses and Proceedings, 1908, page 224, in Wirth, page 184. (emphasis mine)

[30]Andrew S. Draper, "The Adaptation of the Schools to Industry and Efficiency," National Education Association, Addresses and Proceedings, 1908, pp. 74-75., in Wirth, page 185. (emphasis mine)

[31]Ibid.

[32]Charles A. Prosser and Thomas H. Quigley, Vocational Education in a Democracy, revised edition, (Chicago: American Technical Society, 1950), pp. 454-455, in Wirth page 232.

of competent workers, and it will have 'little or nothing in common with corresponding content in any other occupation. In setting up its program therefore, the [all] day vocational schools must provide as many specific courses or groups of courses as there are occupations for which it proposes to train.'[33] Prosser was convinced that to produce trained workers ready for useful employment, vocational programs had to be managed not by general educators but by those qualified and committed to advance "real vocational education." He pushed hard for "the dual system:" for vocational education administered separately from general education.

"Throughout his long career, Prosser repeated endlessly the arguments for his position. Traditional scholastic education, he maintained, aimed to prepare the citizen for the worthy use of his leisure time. Traditional schoolmen, committed to the task of fostering "leisure culture," operated from the psychological tradition of faculty psychology and formal discipline. This, they thought, would lead to general mental training and "cultural appreciations." There were several clear reasons why new programs of vocational training could not be entrusted to such men. "Culturists" were cut off from the practical world of work, and their outmoded theory of learning made them incapable of managing genuine skill training programs. 'Vocational education,' Prosser argued, 'only functions in proportion as it will enable an individual actually to do a job . . . Vocational education must establish habits: habits of correct thinking and of correct doing. Hence, its fundamental theory must be that of habit psychology.'[34] The new scientific psychology pioneered by Edward Thorndike, said Prosser, assumed that the mind is a habit forming machine. There was an obvious fit between this psychological theory and vocational education, when the latter was conceived as 'essentially a matter of thinking and doing.'[35] In contrast to the theory of general mind training of the discredited faculty psychology, Thorndike's theory taught that 'all habits of doing and thinking are developed in specific situations.' Prosser deduced correlatively that the content of vocational training should be determined by 'the actual functioning content' of a given occupation. 'If you want to train a youth to be an efficient plumber, you must select the actual experiences in the practice of the plumbing trade that he should have and see that he gets these in a real instead of in a pseudo way.'[36]

---

[33] Ibid., pp. 286-287, in Wirth, page 232.

[34] Ibid., pp. 215-220 et passim, in Wirth, page 233.

[35] Ibid., page 216, in Wirth, page 233.

[36] Ibid., page 228, in Wirth, page 233.

"Since his rationale excluded general educators from the management of vocational training, Prosser fought as long as possible for a separately administered type of vocational education. In the final politicking prior to 1917, he had to make some concessions; but in the main, he created a framework which permitted vocational programs to stand apart. The Smith-Hughes Act did establish a Federal Board for Vocational Education, separate from the U. S. Office of Education and responsible only to Congress. The seven member Board consisted of the Secretaries of Labor, Commerce, and Agriculture, and three citizens representing labor, agriculture, and manufacturing and commerce. The Commissioner of Education was added partly to allay the anxieties of the N.E.A. Philander Claxton, Commissioner of Education, helped to secure a separate board for vocational education by maintaining that U. S. Office of Education staff was not properly constituted to administer the provisions of the Act.[37]

"Prosser was immediately appointed Executive Director of the Federal Board and served in that office in its first two crucial years. He established the initial tone of administration. States were given the option of setting up separate boards, or of administering vocational education under the aegis of their general boards of education. In actuality, both the language of Smith-Hughes and the administrative style of Dr. Prosser assured that vocational education would function largely as a separate aspect of education within the State."[38]

It is with the philosophy of Prosser that I take major exception. Though I agree to the necessity of such a rationale in the early twentieth century, I cannot accept it as our total rationale of today. Yet, when questioned, we seem to always retreat to these particular points of belief held by Prosser. Such beliefs do not withstand the needs of today.

John Dewey. One cannot deal with the theoreticians of that day without coming to John Dewey. One is amazed to realize that, almost without exception, vocational educators of today would claim to be disiciples of John Dewey and

---

[37]Melvin Barlow, History of Industrial Education in the United States, (Peoria: Charles A. Bennett Company, 1967), pp. 114-115, in Wirth, page 235.

[38]Wirth, pp. 232-235.

yet, again almost without exception, our actions exemplify much more the writings and theories of Prosser.

"Dewey maintained that the quality of schooling which might ensue in the new era was related to the decision the nation would make about organizing economic life. He noted the American devotion to the universal common school but questioned the ends our system served. He acknowledged that the common school opened opportunities to many and that it aided in cultural unification. But, Dewey argued, if the system 'merely turns out efficient industrial fodder and citizenship fodder in a state controlled by pecuniary industry, as other schools in other nations have turned efficient cannon fodder, it is not helping to solve the problem of building up a distinctive American culture; it is only aggravating the problem.'[39] Schools used primarily to help people get ahead, to fill job needs, and to parrot textbook cliches nourished a kind of infantilism.

"Dewey stressed the point that a genuine renewal of individuality could not be accomplished by school reform alone, but had to be accompanied by economic-social reconstruction as well.

> "I can think of nothing more childishly futile, for example, than the attempt to bring "art" and aesthetic enjoyment externally to the multitudes who work in the ugliest surroundings and who leave their ugly factories only to go through depressing streets to eat, sleep, and carry on their domestic operations in grimy, sordid homes.

"Dewey made the analysis of the process of inquiry one of his primary tasks as a philosopher.[40] He described it as an active, meaning-seeking process. By stressing the point that science is not the passive reception of finished facts, Dewey tried to emphasize the active intervention which the knower had to make to understand and cope with his world. He referred to his philosophy as experimentalism because it stressed the importance of treating ideas as hypotheses or plans of action which had to be warranted. Science, then, was the best and most vivid example of the marriage of theory and action. By using experimental science as a model, Dewey stressed the philosophical point that action, practice, and behavior cannot be alien to thought but are necessary to it. This demonstrated, he felt, that the ancient tendency to disparage practice as compared to contemplative thought was mistaken.

---

[39]Ibid., page 143, in Wirth, page 256.

[40]See, for example, John Dewey, Logic: The Theory of Inquiry, (New York: Holt, 1938), in Wirth, page 264.

> "In education, Dewey opposed practices which treated learning as a passive process of absorbing information. He stressed the importance of learners being physically and mentally active as inquirers. The popular image of Dewey's position is contained in the slogan 'learning by doing,' and there is warrant for it. But Dewey was equally concerned with meaning, and his famous definition of education combines the features of action and meaning-seeking. '[Education] is that reconstructing or reorganizing of experience which adds to the meaning of experience, and which increases ability to direct the course of subsequent experience.'[41]
>
> "The test of whether an experience is educative, is not whether mere activity is involved, but whether it leads us to see new meanings about the world or ourselves."[42]

It is the philosophy of Dewey to which we have given lip service whereas we have operationalized the philosophy of Prosser. We need to reassess everything in the light of Dewey.

The 1963 Vocational Education Act Philosophy

Not much change was evidenced in the philosophical rhetoric of vocational educators until the early sixties, when according to Wirth,

> "The critics of the 1960s identified two central failures of vocational education: (1) its lack of sensitivity to changes in the labor market, and (2) its lack of sensitivity to the needs of various segments of the population. Critics charged that Smith-Hughes programs had been confined to a very narrow part of the spectrum of work activities, and had failed to make imaginative adaptations to the demands of a fast-changing economy. By concentrating on the job requirements of industry and by restricting its efforts to secondary school age students, Smith-Hughes also failed to give priority to the vocational needs of all groups in the community.
>
> "The 1963 Act announced as its aim the development of vocational education for persons of all ages in all communities. This was to be accomplished with a unified concept of vocational education, rather than by sharply separated programs for vocational agriculture, home economics, trade and industries, or distributive education. Special attention was to be paid to the needs of disadvantaged

---

[41]John Dewey, Democracy and Education (New York: The Macmillan Company, 1916), pp. 89-90, in Wirth, page 264.

[42]Wirth, pp. 256-264.

persons who had dropped out of school, lacked basic education skills, or needed re-training.

"Several of the basic 'operational principles' of the revision of the sixties illustrate dramatically the departure from Prosser's preferences.

> "Vocational education cannot be meaningfully limited to the skills necessary for a particular occupation. It is more appropriately defined as all of those aspects of educational experience which help a person to discover his talents, to relate them to the world of work, to choose an occupation, and to refine his talents and use them successfully in employment . . .
>
> "The objectives of vocational education should be the development of the individual, not the needs of the labor market . . .
>
> "It is no longer possible to compartmentalize education into general, academic, and vocational components. Education is a crucial element in preparation for a successful working career at any level . . . Culture and vocation are inseparable and unseverable aspects of humanity . . .
>
> "The practice of structuring teacher education along the traditional occupational category lines perpetuates fragmentation of vocational education, severs it further from general education and hinders adaptation to labor market conditions."[43]

Though these concerns were raised, the only recognizable change in the Vocational Education Act of 1963 was the slight broadening of the concept to include pre-vocational and its emphasis on specific target groups. In actual implementation we treated these new target groups as narrowly as we had treated the Smith-Hughes recipients.

When the 1963 Act was evaluated in 1968, it was suggested that

> ". . . pedagogical techniques inherent to vocational education, such as opportunities for multi-sensory experiences and the relation

---

[43]Working Papers, 1968, pp. 47-50, 37-39, et passim., in Wirth, pp. 237-238.

of classroom student to out-of-school experience, might also enliven general education. They suggested that studies which relate learning to the world of work could be important at all levels, from the elementary school on. Smith-Hughes legislation had denied funds for pre-vocational activities (excluding such creative new programs in industrial arts as American Industry projects at the junior high school level).

"Clearly, modern concepts of vocational education form a significant departure from Prosser's philosophy. Long before, in the years preceding enactment of Smith-Hughes, John Dewey had set himself in even sharper opposition to the social efficiency orientation of David Sneeden and Charles Prosser. Dewey argued that the question of how to interrelate technical and liberal studies in American schooling was ultimately related to the question of what quality of life would obtain in American technological civilization."[44]

Tentative Conclusions

As I have looked at these various philosophies, I again return to my original question. Does vocational education have a concise, consistent philosophical base upon which we can draw? I find after this brief perusal of the literature that:

(1) If we have a philosophical base broad enough to cover all our actions, it is so diffuse and eclectic as to be almost non-existent, or

(2) If we choose to select one of the several versions of our so-called philosophical base, then we immediately begin to operate some facets of our program in direct opposition to the philosophy so stated. Let me clarify, if I may.

a. If we have a philosophical base broad enough to encompass the funding of such programs as dissimilar as Career Awareness and three-hour blocks of instruction in electronics at the 12th grade level, then we must embrace philosophies that reach all the way from Dewey to Bagley.

b. If, on the other hand, we fully embrace Prosser, how do we even contemplate support of the concept of Career Education?

---

[44]Wirth, pp. 237-238.

Perhaps the philosophic base of vocational education is not so much nonexistent as it is schizophrenic. Justifiably, there are those who will take me to task on my tentative conclusions. If I am wrong, I would be pleased to be corrected.

An Attempt at Defining a Philosophical Base

There are efforts under way to make some positive assertions about our philosophy. I looked with real excitement and interest at the Fourth Yearbook of the AVA entitled "The Philosophy for Quality Vocational Education Programs." The highly respected Melvin L. Barlow who served as editor for the book says immediately in the introduction, however, that this is not a philosophical treatise as the title would suggest but "a book about principles, issues, concepts, and fundamental considerations related to vocational education in general."[45] A brief review of the articles, all exceedingly well done, proves him to be correct for little philosophical meat was found in such articles as "Organization of Vocational Education in the Educational System" by Robert Miller; "Administration and Supervision" by Merle E. Strong; "Career Guidance in America: Heritage and Promise" by Henry Borow; and "The Economics of Vocational Education" by Garth Mangum. Each of these articles seems to have been written on the assumption that whatever had guided vocational education thus far "would surely take us home" if we but understood the principles that make our system "tick."

---

[45]Melvin L. Barlow, The Philosophy for Quality Vocational Education Programs, 4th Yearbook of the American Vocational Association, the AMERICAN VOCATIONAL ASSOCIATION, INC., Washington, D.C., 1974, page 5.

My problem with these writings is twofold:

(1) They deal with principles (which are good) which have to operate from some philosophical base but never question that philosophical base. They seem merely to assume that such a base is there and that it should remain inviolate.

(2) I believe that the principles listed have evolved over the years and should not be attributed solely to the original leaders of the movement. A thorough reading of the original manuscripts will find some of the early leaders contradicting some of these principles. I think Barlow gives too much credit for these principles to the early leaders and not enough credit to persons such as himself who helped evolve these principles.

An Analysis of Vocational Education Principles

Only in the prologue written by Dr. Barlow did I find any inkling of a philosophy for vocational education. He does point out two "fundamental propositions" garnered from the trade movement, i.e., "first, that nearly all trades or occupations can be taught in school, and second, that society benefits in the form of a higher standard of living from trade instruction."[46]

He then begins to establish a quasi-philosophical rationale, albeit he calls them general principles, and says:

> "It is not possible in this prologue to reproduce all of the principles that appear to have relevance to the ongoing programs of vocational education. But it is possible to suggest a number of the fundamental ideas that have withstood, and probably will continue to withstand, the test of time.

---

[46]Ibid., page 18.

> These ideas have been gleaned from the publications of the National Society for the Promotion of Industrial Education and other documents of the period of 1906-1917."[47]

For purposes of substantiating my belief that these are truly only quasi-philosophical and that our intent should be to question these and look more deeply, I will address each principle listed by Barlow and then raise questions by referring to the original tenets held by those supporters to whom he attributes the ideas. My point is not to villify Dr. Barlow but to suggest that we had better deal with more basic issues rather than blithely move to a second level of principles and assume our base is explicable.

Principles listed by Barlow included:

"Citizenship

> It was recognized early by the Society (1907) that the social stability and economic prosperity of the nation depended in large measure upon the character of its citizens. Their views of the function of government and of general social relationships were vital elements in the march toward progress. The idea that vocational education would foster, support, and promote values of good citizenship was strongly embedded in the rationale for vocational education."[48]

It may well be true that the Society spoke to citizenship but one should read cautiously concerning the ideas of the Society vis-a-vis Snedden on citizenship.

> "Snedden argued that the ultimate aim of education was 'the greatest degree of efficiency.' We could afford to permit the universities to continue to provide adequate education for the professionals and the leadership class, he said. But we could not tolerate the failure of schools to provide for 'those who do duty in the ranks . . . who will follow, not lead.' Efficiency for "the rank and file" meant 'not only training for culture's sake, but that utilization training which looks to individual efficiency in the world of work.' Training in the trades and business, Snedden said, was a legitimate obligation of public education. The "old education" was judged to be "prescriptive and logical" and relied on the sacred "tripos" of Greek, Latin,

---

[47]Ibid., pp. 19-20. (emphasis mine)

[48]Ibid., page 20. (emphasis mine)

and mathematics. This curriculum, more than poverty or the lure of employment, was what drove children from school. The 'new education,' he predicted, would be an elective program that included both a variety of child interests and a regimen designed to fit the child to his place in society. It would lead the child 'toward the realities of present life;' and when the child was properly "fitted," he would possess 'such an intelligent understanding of authority as [to] make the exercise of arbitrary authority unnecessary.' [49]

"Dewey charged that Snedden's narrow trade training was 'social predestination,'[50] and Bode attacked Sneddenism as a plan to perpetuate class differences and promote passive acquiescence to the status quo.[51]

"Snedden used a variety of arguments to meet his critics. He argued that 'real vocational education' opened opportunities for economic betterment to the neglected rank and file and therefore was an antidote to undemocratic features of the regular system. When Bode spoke of the need for social democracy to complement political democracy, Snedden replied that by "social" democracy, Bode meant 'industrial (production) democracy, marital democracy, cultural democracy, religious democracy, racial democracy,' and so forth. Along all these fronts, movements were urging forward, Snedden said, but the enduring question remained. 'How much can social efficiency stand of these several democracies?'[52] If the American people would be called upon to decide between social efficiency and democracy Snedden had little doubt about the choice they would make."

I concur that citizenship is a valid principle upon which vocational education stands. However, I believe it was evolved, over time, and cannot be attributed totally to the original leaders who seemed to want vocational education to be a social determinant as opposed to a liberating force.

---

[49]Wirth, page 210.

[50]John Dewey, Industrial Education - A Wrong King, New Republic, II, February 20, 1915, pp. 71-73.

[51]Boyd Bode, "Why Educational Objectives?" School and Society, May 10, 1924, pp. 531-539, in Wirth, page 227.

[52]Snedden, Toward Better Education, page 338, in Wirth, page 227.

A second principle elucidated by Barlow was:

"General Education

> Only through the best of public education could vocational education prosper. Thorough grounding in the fundamentals of public education in the elementary school was regarded (in 1907) as a basic element upon which vocational education must rest. But the Society's general education goals did not rest entirely with the elementary school. In fact, years later when the legislation for vocational education began to take shape, a major part of the vocational education program was cast as an integral part of the secondary school program."[53]

Again, Prosser seemed to be dramatically opposed to Barlow's principles. He stood forthright for a separate system of vocational or trade schools and wanted no part of a program which promised to integrate industrial studies with general education experiences.

> "Prosser advocated a simple forthright task for all the schools: 'to direct and train all the children of all the people for useful service.' He stood with those who judged the public schools in terms of efficiency criteria and found them to be failures.
>
> "For Prosser, the remedy was clear-cut and obvious; identify the aptitudes of children as early as possible; find out the needs of local industry; group children with likely career lines; give the specific training to make them efficient in their work . . . . [Ben] Johnson's kind of talk, concerning the study of industries and industrial processes as part of a general education, was proof to Prosser of the kind of perversion of trade training that invariably followed when general schoolmen got their hands on it. The differences between the two men reflect basic value differences[54] . . ."

And remember it was Prosser, not Johnson, who wrote the Smith-Hughes Act and, in fact, administered it as Executive Director of the Federal Board of Vocational Education. I do not believe that the present day concept of integration of vocational education into the total

---

[53]Barlow, page 20.

[54]Wirth, page 193.

curriculum is grounded in the National Society for Promotion of Industrial Education platform.

Clientele

I find no argument with Barlow's statement concerning clientele,

> "Almost from the very beginning of discussions about vocational education the Society had determined that the program should not limit its instruction to a narrowly conceived group. The actual wording in a 1907 bulletin of the Society reads as follows: 'All . . . schools [should be] open to all; sex, creed, color, or nationality should not debar anyone.'"[55]

However, one wonders at the reason for including all in 1907 in such a statement when one reflects upon the evidence that the major reason for the support of manufacturers rose out of a need for skilled labor in order to be a competitive world power. Also, one must look at the anti-union bias held by the original members of the Society as one evaluates such a statement.

Theory and Practice

It is here that I take major exception with Dr. Barlow's analysis. He says:

> "The modern idea in 1908 was to place emphasis on both theory and practice. 'The thoroughly skilled mechanic ought to understand not only the physics of his work, the science and mathematics, but something of the art itself.' It was intended that the student learn a maximum amount of a trade in a minimum time and still receive a diploma of graduation. The 'theory of doing' and the 'practice of doing' were to be integrated with an appropriate amount of collateral academic training. The intent of instruction was clearly to produce an exceptional craftsman (journeyman) who could advance to positions of higher responsibility. The terms theory and practice went hand in hand and both were important."[56]

---

[55]Barlow, page 20.

[56]Ibid.

I find it hard to accept this generalization when I, in turn, read some of Prosser's writings to the effect that:

> "Vocational Education," Prosser argued, "only functions in proportion as it will enable an individual actually to do a job. . . Vocational education must establish habits: habits of correct thinking and of correct doing. Hence, its fundamental theory must be that of habit psychology."[57]

Prosser stated the third general theory of vocational education as:

> *"vocational education will be effective in proportion as it trains the individual directly and specifically in the thinking habits and the manipulative habits required in the occupation itself."*[58]

Though Prosser speaks of "thinking habits," I find it hard to translate those circumscribed "thinking habits" which he limits to a specific vocation to the term "theory" as used by Barlow. If we believe (as we do) that theory and practice are interrelated, the idea is not consistent with Prosser's Habit Psychology.

Cooperation

I find no argument with the principle herein listed by Barlow as:

> "The vocational education program was not visualized as the responsibility solely of the school. The best organization took into account the group for whom training was intended (employers) and the actual needs of these involved in the occupation (employees). Through the formative period of vocational education the trinity -- employer, employee, educators -- was acknowledged as indispensable to a quality program. From such ideas, emerged the advisory committee as the guardian of appropriate vocational education programs. In no other way could the program fit the real need of society."[59]

---

[57] in Wirth, page 233.

[58] Charles A. Prosser and Thomas Quigley, Vocational Education in A Democracy, American Technical Society, Chicago, Illinois, 1949, in Wirth, page 220.

[59] Barlow, page 21.

A National Problem

Barlow states eloquently that:

> "Because of the mobility of labor, the inability of the states to develop vocational education programs and the need to use our human resources wisely, vocational education was thought to represent a national problem -- one requiring federal funding to establish appropriate standards and to promote a degree of uniformity in maintaining at least minimum levels of competency."[60]

However, one should hear the analysis of Wirth concerning the support of the N.A.M. for federal funding before he becomes too impressed with the altruistic motives of our supporters at that time.

> "When proposals were made to use federal taxes for groups or interests outside the sphere of business, the N.A.M. objected. But when the issue was the advancement of business welfare -- with which the public welfare was equated -- the manufacturers felt no hesitancy in appealing for federal action and financial support. One need only recall N.A.M. support of measures like federal standardization of freight rates, the expansion of the consular service, subsidies for an American merchant marine, and moves to construct a Central American Canal, to see that their endorsement of federal support for industrial education was quite predictable."[61]

Individualized Instruction

One can argue very little with Dr. Barlow's comments on this principle as he says:

> "Vocational education did not invent individualized instruction but it developed the concept thoroughly as an integral part of vocational education."[62]

---

[60]Ibid.

[61]Wirth, page 56.

[62]Barlow, pp. 21-22.

After listing these principles, although he does allude to their possible reinterpretation, Dr. Barlow says that:

> "The system of vocational education postulates that the vocational education movement rests upon a solid foundation of basic principles that do not change with time."[63]

Here I disagree violently. I believe that not only have we changed our interpretation of these basic principles listed above (though Dr. Barlow's listing of such changes seems more to be an analysis of a continuing reassessment of our clientele group) but we have changed our basic philosophical approach, without proper delineation of such changes. Otherwise, how can Dr. Barlow give such credit to Prosser and his dictums as he does and state at the same time his own belief that:

> "If the position is taken that a person's vocation is what he does to earn a living, then 'vocational subjects' is a variable and not a constant. Whether or not a subject is vocational is determined by the will of a person and is not a characteristic of the subject."[64]

My own belief is that we operate on the basis of the evolving philosophy of the Mel Barlows but we have not redefined and stated lucidly such philosophies. Instead, we retreat to the original tenets of our founding fathers for support and, thus are schizophrenic. Is it any wonder we appear to friend and foe alike to be inexplicable even to ourselves? It's as if we sing loudly in the slightly paraphrased words of the old hymn: "Through every high and stormy gale,
My anchor holds within the veil.
On this, the solid rock, I stand,
All other ground is sinking sand. . ."

---

[63]Ibid., page 23.

[64]Ibid., page 28.

Yet when we analyze deeply, our present day anchor is not grounded to the same rock as in 1917 but to our own redefinition of vocational education. If this be true, let's find that rock, note its specifications and stake it out!

III

A TENTATIVE PHILOSOPHY WHICH VIEWS VOCATIONAL EDUCATION AS A FUNCTION OF THE EDUCATION PROCESS AS WELL AS A FUNCTION OF THE SOCIO-ECONOMIC PROCESS

It is the responsibility of anyone who has been as highly critical as I have been to suggest a possible alternative. The tentative philosophy which I propose to sketch is evolving with me much as a river maintains its direction but constantly changes internally. At the moment, it is by no means suggested as the best philosophical base nor the most appropriate philosophical base for vocational education. It is only one of many that might be offered and, inasmuch as it is evolving, I would welcome criticism and suggestions for improvement. It has evolved from a serious analysis and consideration of both the history of our movement and an abiding belief that vocational education is a part of the educational process as well as a part of the educational program.

A Longitudinal Perspective

If one views the history of vocational education, one discovers that prior to the 1900s vocational education did exist. However, it existed apart from the formal education structure in various approaches, such as parental training, tribal training, apprenticeship and the like. It was not until the late eighteenth century that any questions were raised concerning its inclusion in the formal structure.

I would like to propose that vocational education as a function of formal education emerged for reasons not contrary to the demand for skilled employees as enunciated by N.A.M. but in addition to those

reasons. I do believe strongly that vocational education as a function of the educational process as well as a function of the socio-economic process was accepted, at least tentatively and more important, legitimized, by leading schoolmen of the early twentieth century. It was this willingness, in my opinion, of leading administrators to give this new idea an opportunity to succeed that legitimized its acceptance into formal education and not just the pressure exerted by the National Society for the Promotion of Industrial Education. Yet, it probably was much more politically expedient for administrators to accept the rationale for vocational education as expounded by the National Society for the Promotion of Industrial Education at face value than to be cast into the camp of "non-believers" and "culturists" and others who were allowed to have no part to play in the struggle.

If we view the emergence of vocational education in a longitudinal historical perspective, five factors should be considered:

(1) Expansion of conceptual understandings (theory)

(2) Expansion of practical application of such conceptual understandings (technology)

(3) Number of persons to be educated

(4) Chronological origin of vocational education

(5) Concept of true skill salability

If one graphically illustrates these factors over time, several interesting phenomena are observed.[65]

---

[65]The following graphs are general conceptualizations derived by the author and as such can stand much improvement in terms of specificity.

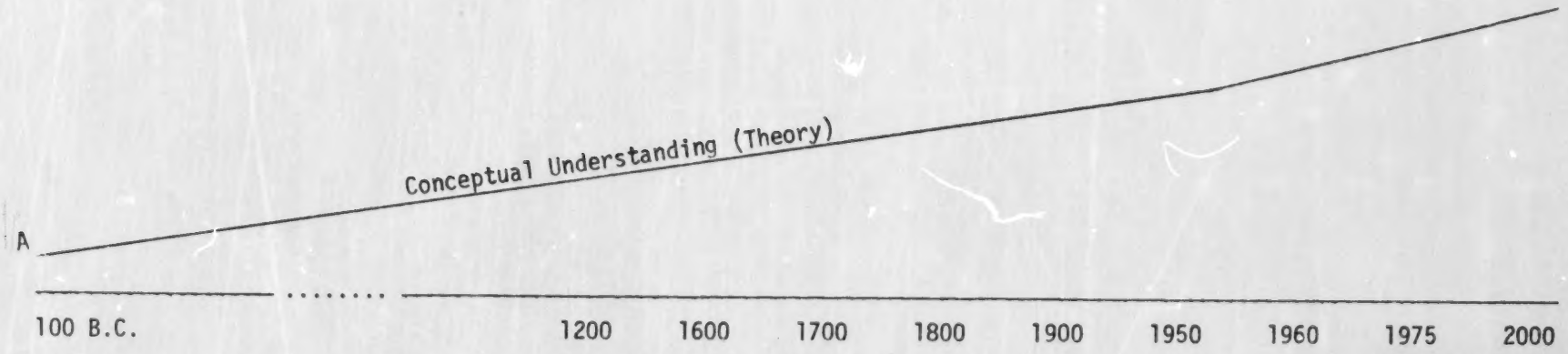


Figure 1. Relative Growth of Man's Conceptual Understanding (Theory)

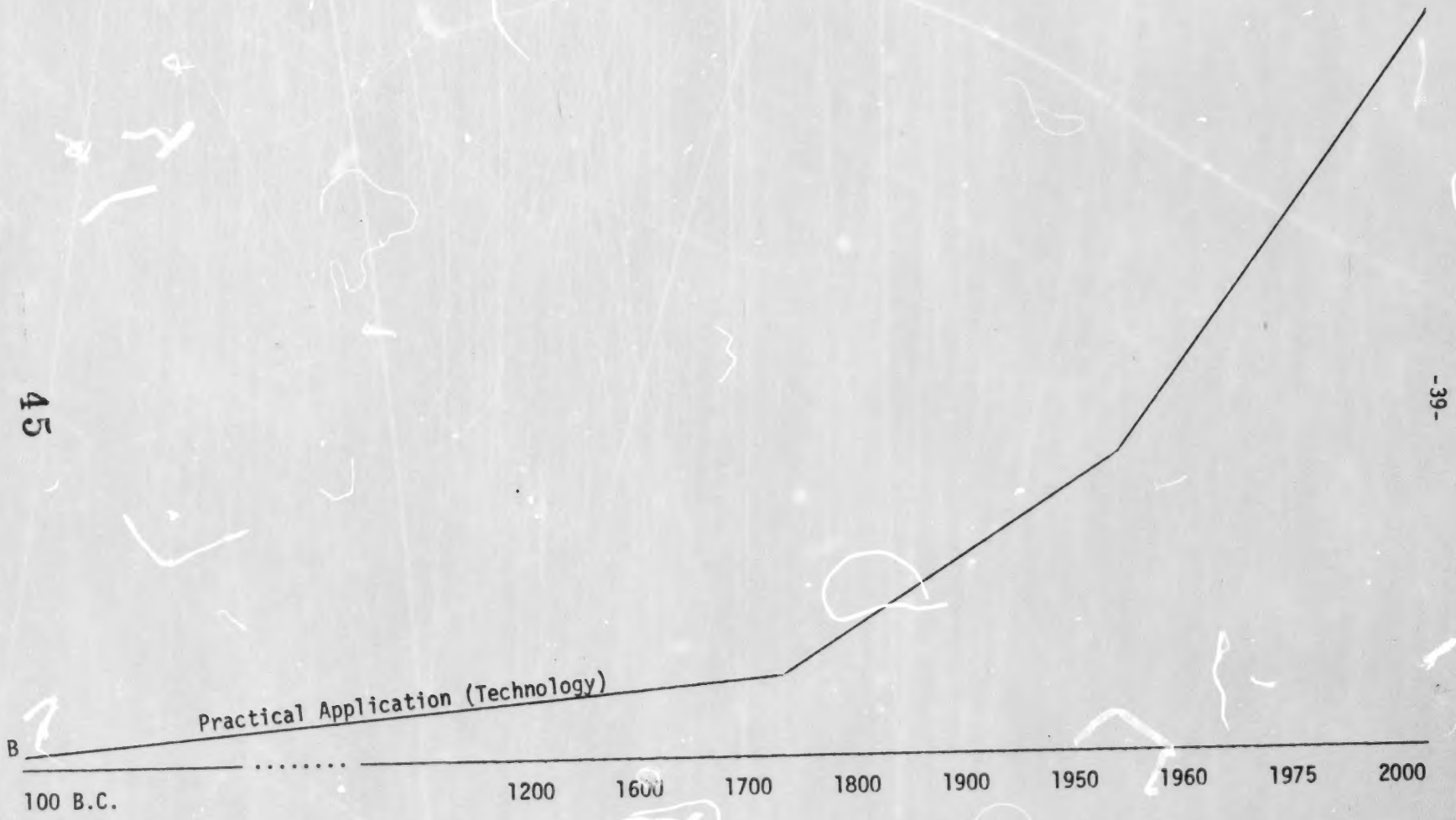


Figure 2. Relative Growth of Man's Practical Application of Acknowledged Theory (Technology)

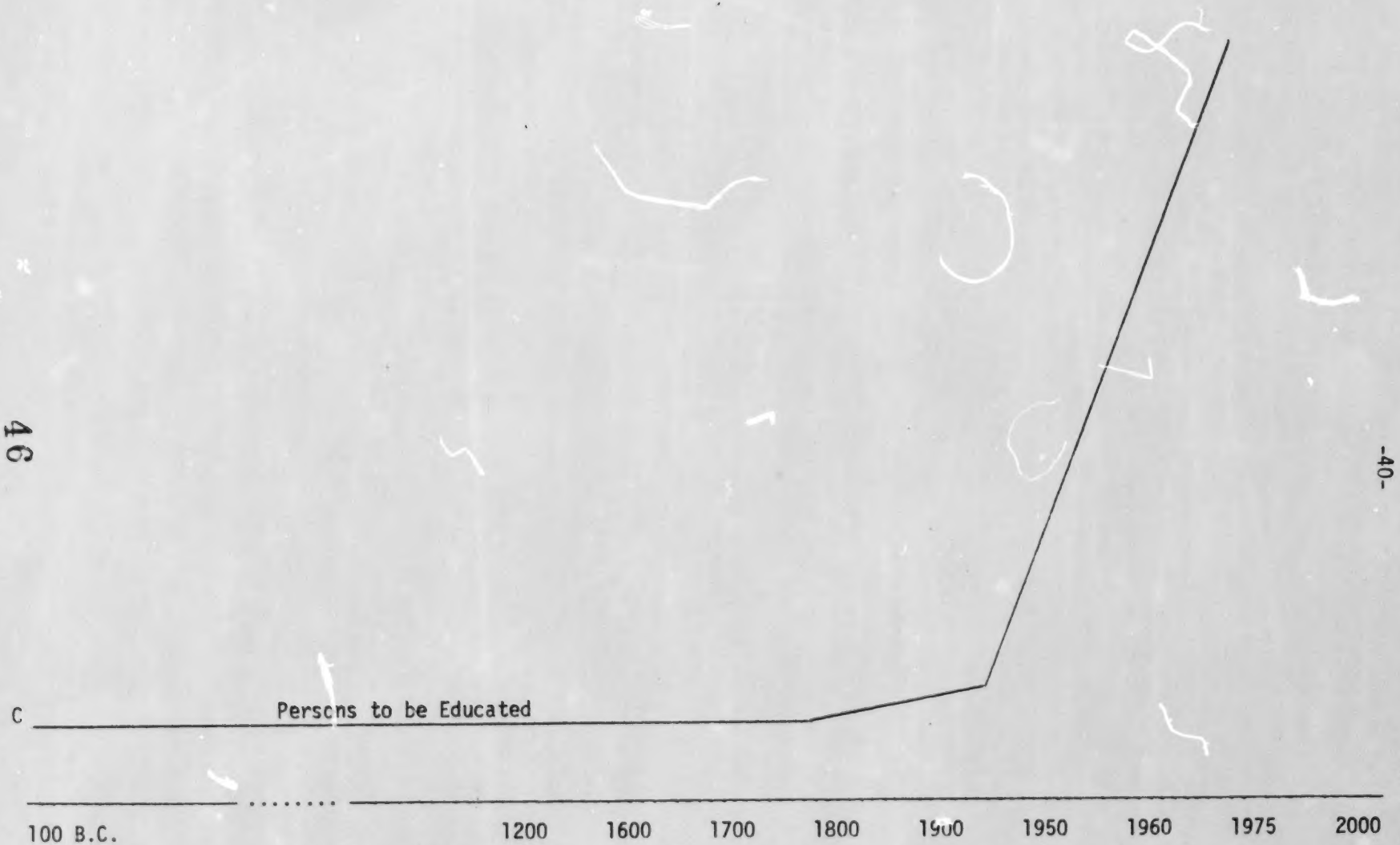


Figure 3. Growth of Percentage of Population to be Educated by Society.

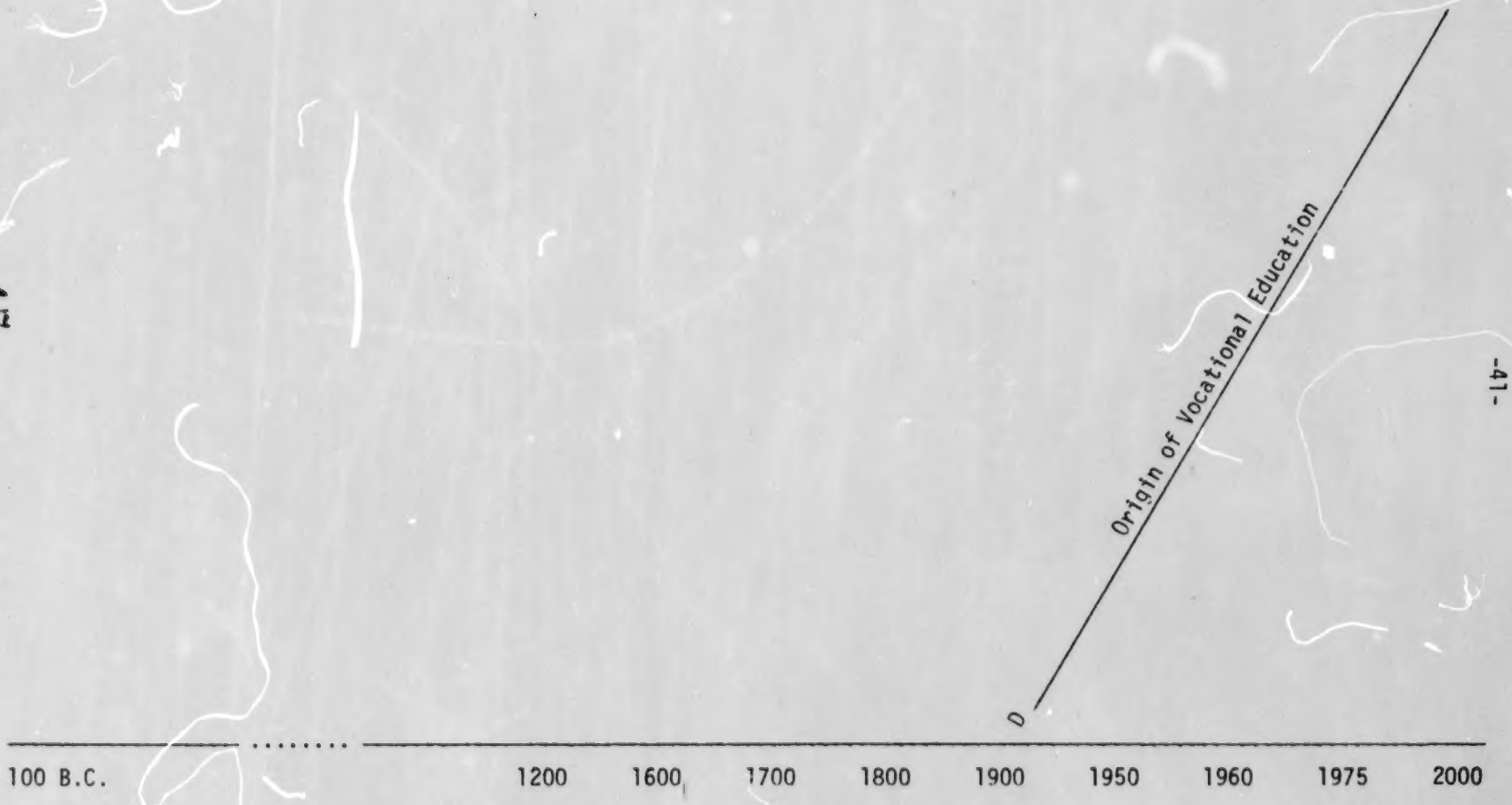


Figure 4. Origin and Growth of Vocational Education.

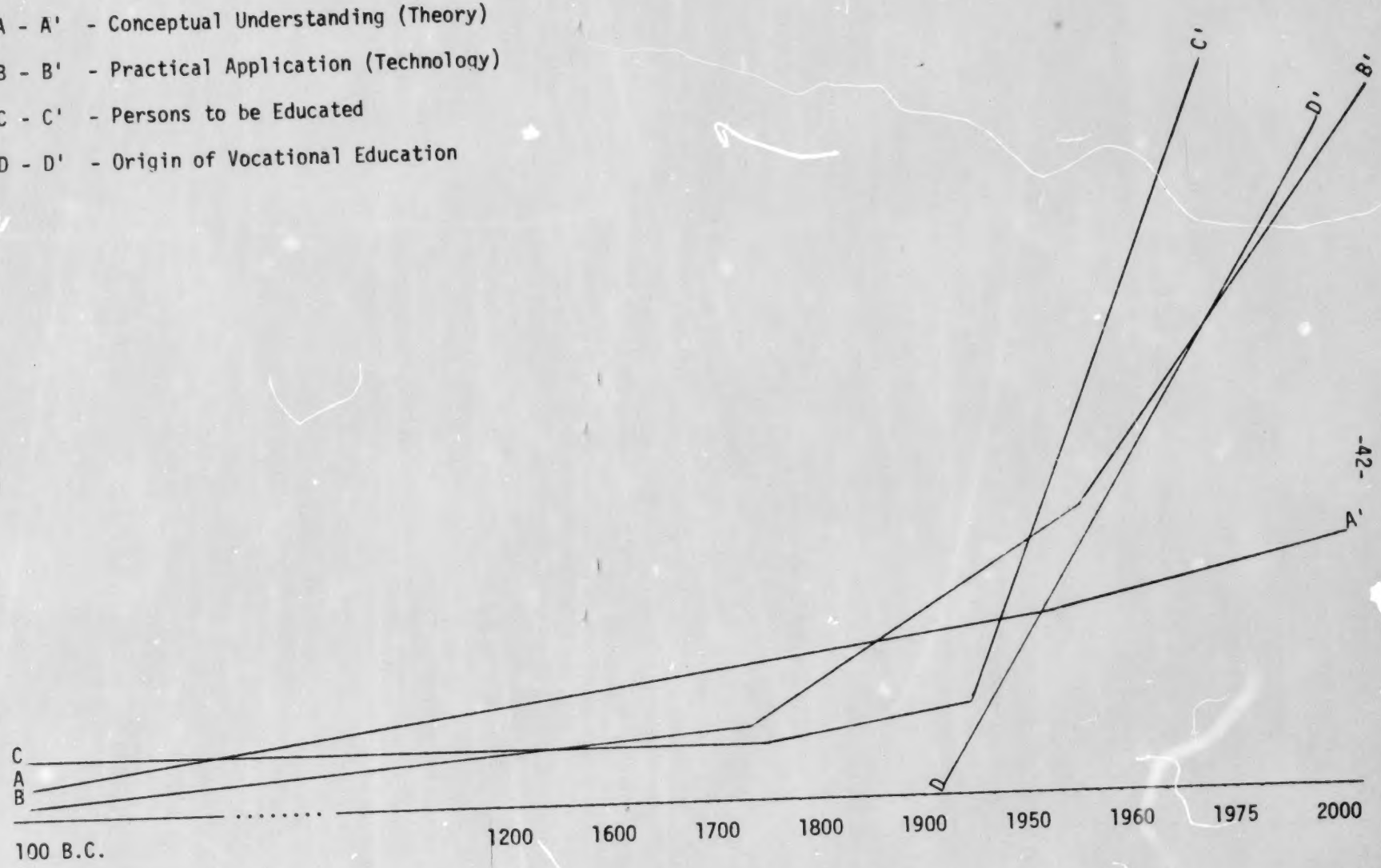


Figure 5. Inter-Relationship of Man's Expanding Theory, Expanding Technology, Number of Persons to be Educated, and the Origin of Vocational Education.

Relative Growth of Man's Conceptual Understanding (Theory)

Figure 1 attempts to show that man's conceptual understanding of the nature of the universe and his discovery of its seeming immutable laws has grown at a steady, though agonizingly slow, pace. There is one exception; i.e., a slightly more rapid increase in our understanding of basic theory as a result of space exploration which began in the early sixties.

Relative Growth of Man's Practical Application of Acknowledged Theory (Technology)

Figure 2 purports to show very little practical application of the acknowledged theory of the time until around the sixteenth century when the world shook off the shackles of the Dark Ages. It was not until around 1740, however, with the advent of the Industrial Revolution, that technology came into its own. From that point, however, it has accelerated in geometric proportion. Its increase since 1960 wherein we entered the Space Age shows evidence of totally engulfing us in its swelling tide.

Growth of Percentage of Population to be Educated by Society

Any casual student of educational history recognizes that it was not until the twentieth century that any society (and then, only in America) felt compelled to support universal education or education for all children.

Figure 3 depicts this dramatic change beginning at the turn of the century.

Origin and Growth of Vocational Education

Figure 4 simply depicts the origin and growth of vocational education.

Interrelationship of Man's Expanding Theory, Expanding Technology, Number of Persons to be Educated and the Origin of Vocational Education

It is when one takes these factors (as shown in Figures 1, 2, 3, and 4) and transposes each of them upon the other as shown in Figure 5, that interesting questions begin to emerge. Such questions are formulated when one notes that it is in the period of 1850 - 1920 that the most dramatic changes began to impact on each factor. These are the questions which I immediately raise:

1. Does the educational process change when the body of knowledge to be inculcated into the mind of youth changes drastically from a relatively small amount of theory to a relatively large amount of technology?

2. Does the educational process change when society charges its schools with education for all as opposed to education for a small privileged class?

3. Does not education have to change drastically its processes when both these dramatic factors impact upon one another and upon the formal education system simultaneously?

4. Isn't it strange that it is only when conditions 1, 2, and 3 become true that vocational education was accepted and legitimized into the formal education structure? Might there be a correlation among conditions 1, 2, 3, and 4?

Before I answer questions 1-4, let me clearly state my sure knowledge that vocational education (vis-a-vis Smith-Hughes) did come into being as a socio-economic function in order to train skilled workers for industry, business, and agriculture. That can and has been clearly documented.

1. Q. *Does the education process change when the body of knowledge to be inculcated into the mind of youth changes drastically from a relatively small amount of theory to a relatively large amount of technology?*

   A. The educational process must change from dealing with the abstract to dealing with the concrete.

2. Q. *Does the educational process change when society charges its schools with education for all as opposed to education for a small privileged class?*

   A. When society offers education to a selected few, the role of the teacher has a leisurely, comfortable, almost individual one-on-one nature. Educational content may be highly theoretical and abstract. When all are to be taught, however, a different problem emerges. Most people learn best by moving from the concrete to the abstract. Thus the system once again is forced to utilize and capitalize upon an ever-increasing mass of technology in order for its content to be intelligible to the masses.

3. Q. *Does not education have to change drastically its processes when both these dramatic factors impact upon one another and upon the formal education system simultaneously?*

   A. Yes. This really has been answered in 1 and 2 above. However, let me editorialize to the extent that a society which has accepted the responsibility for universal education is indeed fortunate if it has enough technology available to interest each budding intellect.

4. Q. *Isn't it strange that it is only when conditions 1, 2, and 3 become true that vocational education was accepted and legitimized into the formal education structure? Might there be a correlation among conditions 1, 2, 3, and 4?*

   A. This is my major point. It is my belief that though vocational education appeared vis-a-vis Smith-Hughes in 1917 as a socio-economic function, i.e., to train people for jobs, it also appeared with an educational function. As can be seen, the system had to change. Vocational education may have been, and in fact, was politically established to train people for industry. But it, in my opinion, was also established and, more importantly, quietly accepted and legitimized by leading administrators because they viewed it as a method of teaching not only the ever expanding technology of the day but the awesome flood of young faces, most of whom had to start their thinking process in the concrete and be moved gently to the abstract, to whatever degree possible.

Based on the evidence presented in Figures 1-5, I hypothesize that in 1917 the educational function of vocational education was recognized by administrators to be that of technique and methodology, as opposed to being solely content. This made a big difference in 1917 and makes a big difference today. Whereas the methodology of vocational education moved the entire educational process in 1917 from majoring on the abstract to majoring on the specific or concrete, it cannot continue its headlong plunge into more and more specific curriculum content, because to do so becomes detrimental to the student.

One final concept needs to be discussed; that concept deals with the point of diminishing returns in the push for specific technology to be taught to an individual student. This concept will be presented in Chapter IV, when I discuss the true salability of skills.

IV

CONCEPT OF TRUE SALABILITY OF SKILLS

When I suggest in Chapter III that we are methodology as opposed to content, my interest in salable skills will surely be challenged. So I raise the concept of true salability of a skill. Figure 6 shows an interesting phenomenon. It was hypothesized by Prosser, and rightly so in 1917, that the more specific the skill, the more salable the skill. This is true today, to a point. Line E-E represents skill salability in 1920-1950. As one can see salability did increase with specificity of that skill. However, beyond 1950, as technology started to progress at phenomenal rates, this exact relationship did not continue because the intervening variable of transferability began to emerge. As technology increases, a person's ability to comprehend all of such technology decreases and, also, such rapidly advancing technology tends to dictate the decline of the need for previously held skills as jobs change. Thus, a person's ability to adapt to a new job, requiring new skills, becomes another measure of his usefulness to society.

True skill salability, then, becomes a function both of mastery of a specific skill for job entry and the transferability of that skill for career stability. Line F-F' then has two components;
F-F which represents the salability of the mastery of a specific skill for job entry and F'-F' which represents the salability of a person's ability to transfer that skill for career stability over time; with point x representing the interpolation of these two factors resulting in the true salable value of that skill to the person and society.

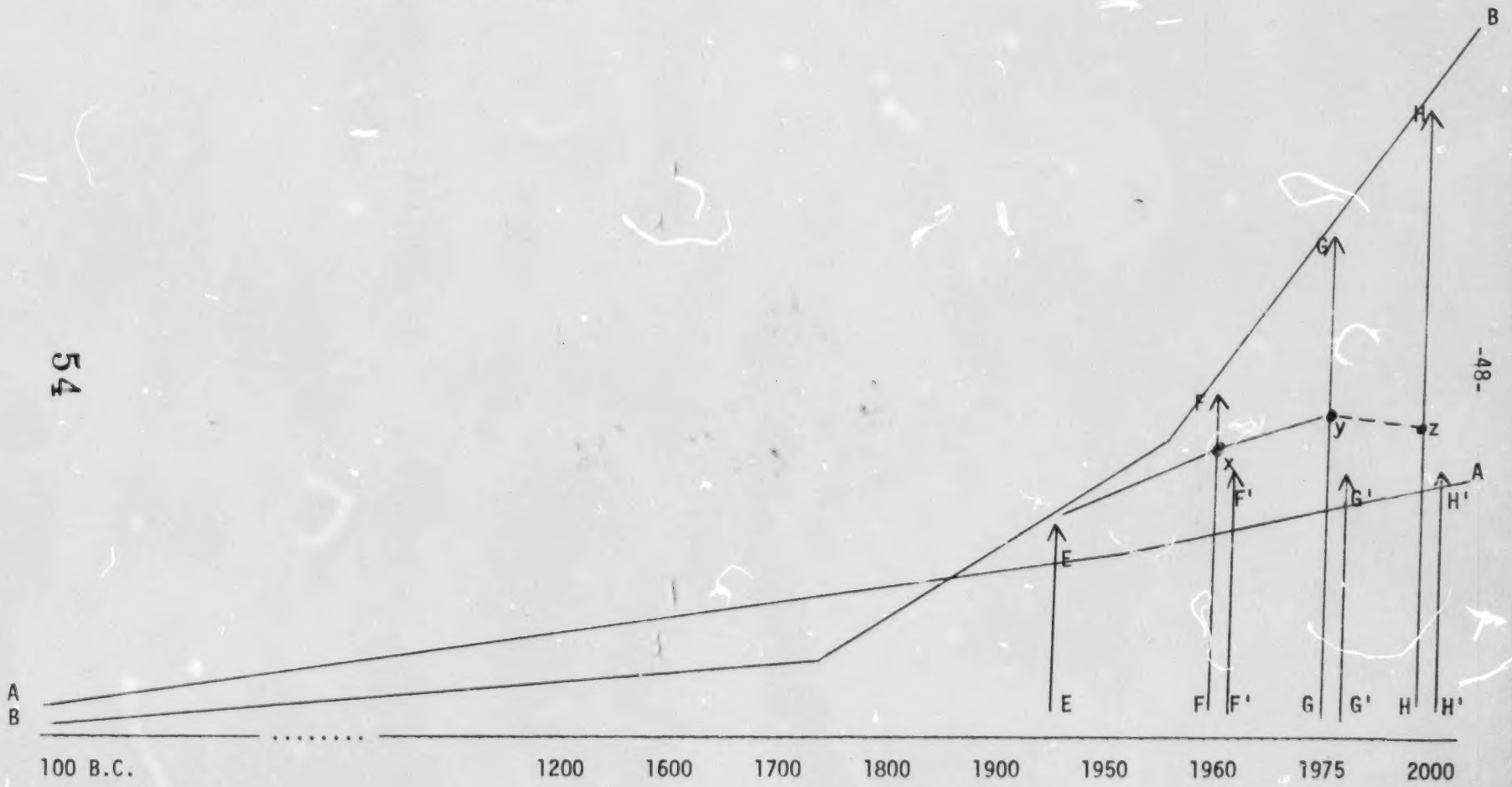


Figure 6. Inter-Relationship of Theory, Technology, and True Salable Value of Skills.

Point x shows that in 1960 whereas there was still a direct correlation of a mastery of a specific skill and its immediate salability for job entry, the intervening factor of transferability had caused the true salable value of that skill not to follow totally the tendency toward specilization. Though, there was still a noticeable correlation between specificity of skill and its salability and transferability it had by no means continued to follow the total gain in technology. This same trend is noted in point y for 1975 and as I hypothesize by the year 2000, we may see a complete reversal of the trend toward specialization as represented by point z. By then we may see that the more theoretical the skill, the more salable the skill. Shades of Ben Johnson; I have come full circle.

Interestingly, present day industrialists are beginning to be receptive to, if not actually proposing, such ideas. Witness, for example, the ready acceptance of the Winston-Salem, North Carolina, Sales and Marketing Executives to comments made by Robert A. Mullen, Deputy Director of Occupational Education for Field Services as early as September of 1970:

> ". . . I [have] attempted to place myself in your position and you in mine, and I [came] upon the following plan . . . I'll tell them about the traits and characteristics which we believe you are looking for in potential employees . . . I believe that you are looking for young people who:
>
> (1) can follow directions;
> (2) are dependable;
> (3) have a good attitude toward work;
> (4) possess the desire to excel, rather than settle for a level of mediocrity;
> (5) possess a cluster of skills rather than proficiency in narrow skill areas;
> (6) are adaptable to doing assignments;
> (7) have the ability to get along with people;

(8) have ability to project a good image to the public; and
(9) have the desire to continuously improve through formal and informal educational experiences."[66]

Before any reader believes that I would "water-down," destroy or generalize vocational education, let me re-emphasize my belief that we do have a socio-economic function; i.e., to train students in salable skills. However, I also believe we have a corollary function, i.e., an educational function of teaching the "theoretical stuff"[67] to all children by taking each one, to the degree possible, from the concrete (salable skill) to the abstract (and, perhaps, increase the salability of his skill in the process).

---

[66]Robert A. Mullen, excerpts from a talk given to the Winston-Salem Marketing Executives on September 8, 1970.

[67]This will be spoken to in the next chapter.

V

UTILIZING THE CONCEPT OF VOCATIONAL EDUCATION AS A FUNCTION OF THE EDUCATIONAL PROCESS IN PLANNING CURRICULA

My two basic hypotheses are:

(1) vocational education is methodology as opposed to content; and

(2) the true salable value of a skill is a combination of its short-range specificity and its long-range transferability.

I now would like to demonstrate how one may use these postulates and build vocational education into its proper place in the educational process. I believe that the position of vocational education is strengthened by doing this rather than made weaker. To do so, however, one has to begin with the entire educational process and the entire curriculum as a starting point.

For my comments here, I have drawn heavily upon the theories of Leon M. Lessigner. In a paper entitled "Educational Stability in an Unstable Technical Society," Lessigner said:

> "Informed opinion regarding the role of the high school in professional, technical and vocational education seems to fall into two camps. One position might be described as the camp of the Greek, Heraclitus, and the other, the camp of the American behaviorist, Watson. The Heraclitians hold to the belief that there is nothing true but change -- that the impact of automation and changes in technology are such as to make it impossible for schools to do any training save that of general education in English, the sciences, mathematics, and so forth. The Watsonians, on the other hand, in the great American tradition of optimism are interested in simulating some of the more important present occupations at the high school level in the belief that youth with immediate salable skills can be gainfully employed and when necessary, retrained to meet changing conditions. They hold to the belief that youth soon to enter the labor market will hold two, three, and even more careers before

they will retire from the labor market, hence they will see little possibility for career training in the school.

"It would appear that both the Heraclitian and Watsonian positions have merit, but neither position is adequate. Analysis of the occupational world indicates that both positions must be utilized in varying proportions according to the nature of the job family for which the pupil is preparing. More importantly, underlying all the professional, skilled and technical occupations, lies a substantial set of behaviors which can be taught, described, and are remarkably stable. It is this stable structure which should be carefully considered by educators."[68]

Lessigner has conceptualized these stable behaviors in a diagram which he entitled "A Set of Stable Behaviors in an Unstable Technical Society" as shown in Figure 7. He explains his concept as follows. "Figure [seven] shows that the stable behaviors consist of at least twelve observable, definable, and teachable stages." The reader will find much information of value if he or she will read Lessinger's entire document which I have included as an Appendix.

For purposes of placing vocational education as a function in the process of education as theorized by Lessinger, let me take two examples: ornamental horticulture and automobile mechanics (see Figure 8).

If one views the body of knowledge as a concentric mass with basic theory in the innermost circle and the most specific technology on the periphery, one begins to be able to make some intelligible deductions about the education process. In my first example, I have placed the theories of the movement of water through plants (transpiration) in the center of our mass of knowledge, with ever-increasing specific application

---

[68]Leon Lessinger, Educational Stability in an Unstable Technical Society, California Journal of Secondary Education, March, 1965.

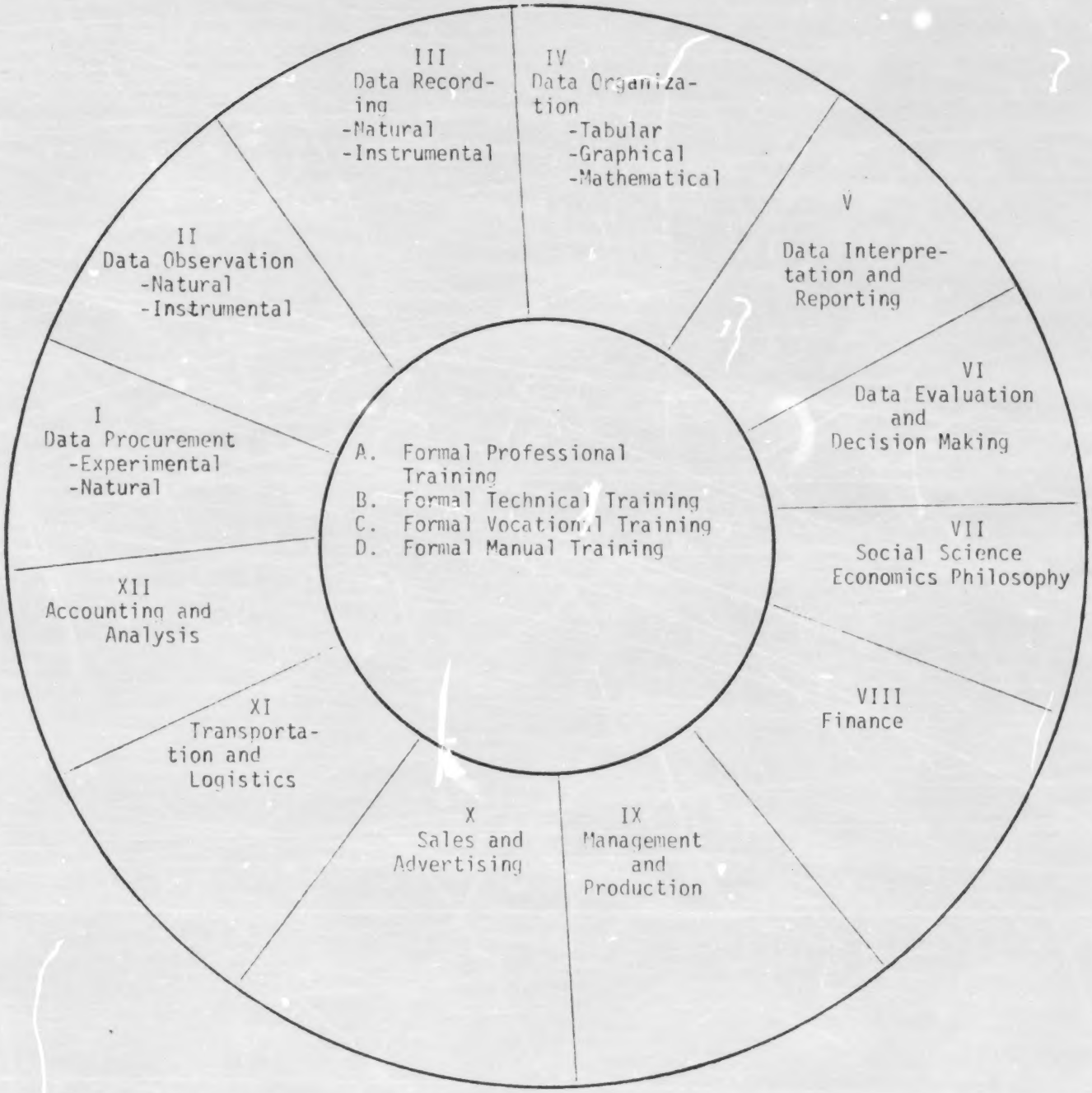


Figure 7. A set of Stable Behaviors in an Unstable Technical Society.[69]

[69]Ibid.

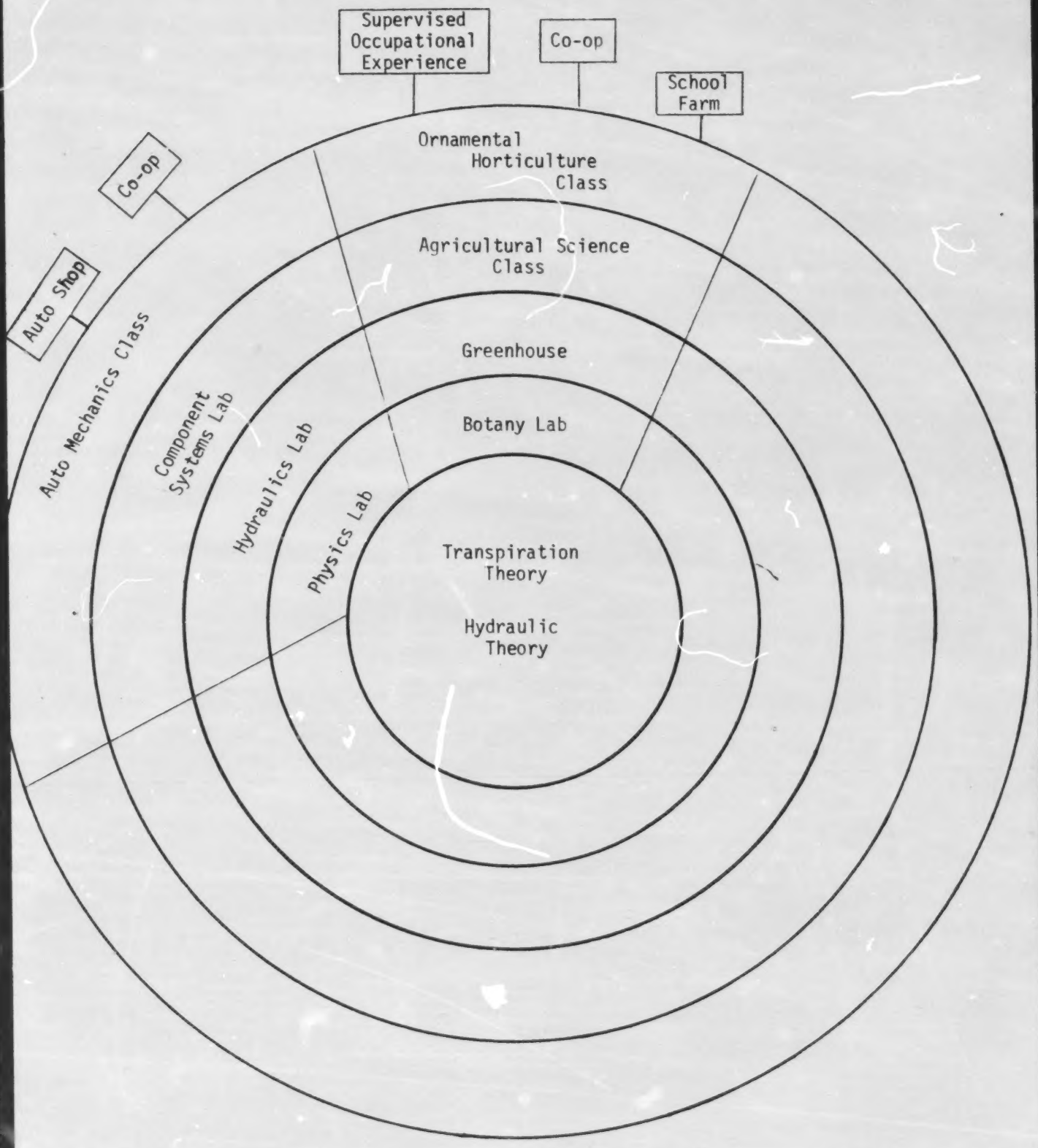


Figure 8. Conceptualization of the Use of Vocational Education as a Function of the Education Process in Planning Curricula.

of that theory in successive rings. One can see immediately that some students who might be intrigued with the very specific (who have a vocational goal of floral aide) will enter the program in an ornamental horticulture class. The teacher, however, will not only teach floral skills but will also move students into basics of agricultural science; subsequently, through the use of a greenhouse to the principles of Botany and finally, if possible, to an understanding of the theory of how water is moved through plants with concomitant growth of plants, photosynthesis, water loss, nutrient loss, production of flowers, etc. All students will not wish to nor be capable of moving into the full depth of theory, but consider the tragedy of teaching students only how to pot plants, maintain soil moisture, and other such short range skills when so much more is possible.

Consider not only the transferability of the understanding of the theory of transpiration to all plant life but also the fact that such principles are principles of hydraulics (movement of liquids) and as such, are concepts used in sanitation engineering, braking and steering systems of cars, and a myriad of other job-related understandings.

Another example could be that of auto mechanics. A student could enter an auto mechanics program to gain short range salable skills. But this system would move him (or her) progressively from the automobile to its systems (braking, steering) to a hydraulics laboratory and ultimately, to the degree possible, to an understanding of the basic principles of physics.

Conversely, one immediately sees the physics or biology student making use of the same laboratory experiences to learn to operationalize his or

or her theoretical concepts. Thus, divergent types of students would be side by side, performing on an individual basis the same activities but for different reasons. They might even learn to respect each other's differences.

Lessinger's theory of the twelve functions would be applied by all teachers at each level but the school would soon operate as a unit, with vocational education in the proper perspective of an education function.

You may come up with many more and better examples. The specific labs on the periphery (or co-op stations) would be determined by needs of business and industry. Students would be given a salable skill for job entry. They would also be given a conceptual understanding of these skills for future transferability. The ultimate goal would be to give the skills which have the greatest possible true salable value to the most possible students.

I recognize that this is nothing new. Vocational people since John Dewey have talked about the "why" as well as the "what." Perhaps, though, it helps us to view ourselves in proper perspective in the process and will bridge the chasm between us and academic educators because it is evident, to me at least, that we all teach the same content. Our only difference is in the point on the continuum of Theory-Technology where we begin.

VI

SUMMARY

After this study, I conclude:

1. We need to clearly delineate a rationale, concise adequate philosophical base for vocational education so that we and all others will recognize our purposes.

2. This process will have to include a thorough, perhaps painful, re-analysis of our traditions of long-standing.

3. The loosely-knit philosophy to which we so blithely refer will not "hold water" in the technological society of today; though parts of it are a good point of departure.

4. Those who are closest to the heart of the program should begin the process and then involve all others who can and want to have input.

5. The tentative philosophy which I have developed may serve no more useful purpose than that of a "straw man" for the leaders of today to attack but at least, it will begin the process of re-definition of our purposes.

APPENDIX

EDUCATIONAL STABILITY IN AN UNSTABLE TECHNICAL SOCIETY

Leon M. Lessinger

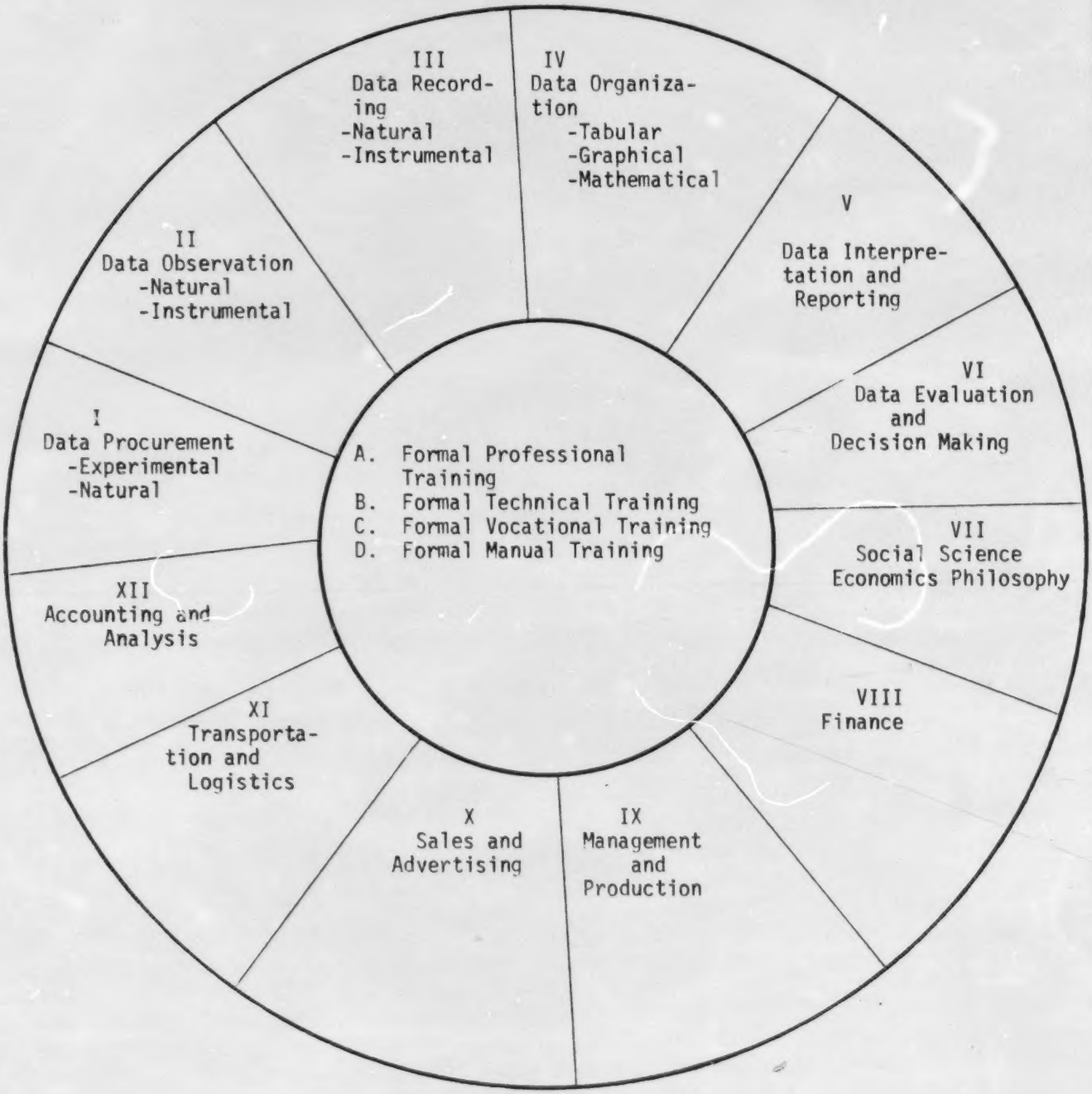
An analysis of most so-called comprehensive high schools today show that neither the present college preparatory program, the present vocational or industrial arts program, nor the present general or cafeteria style non-college preparatory program provides satisfactory preparation for the great range and rapidly diversifying set of post-secondary school opportunities.

Informed opinion regarding the role of the high school in professional, technical and vocational education seems to fall into two camps. One position might be described as the camp of the Greek, Heraclitus, and the other, the camp of the American behaviorist, Watson. The Heraclitians hold to the belief that there is nothing true but change -- that the impact of automation and changes in technology are such as to make it impossible for schools to do any training save that of general education in English, the sciences, mathematics, and so forth. The Watsonians, on the other hand, in the great American tradition of optimism are interested in simulating some of the more important present occupations at the high school level in the belief that youth with immediate saleable skills can be gainfully employed and when necessary, retrained to meet changing conditions. They hold to the belief that youth soon to enter the labor market will hold two, three, and even more careers before they will retire from the labor market, hence they see little possibility for career training in the school.

It would appear that both the Heraclitian and Watsonian positions have merit, but that neither position is adequate. Analysis of the occupational world indicates that both positions must be utilized in varying proportions according to the nature of the job family for which the pupil is preparing. More importantly, underlying all the professional, skilled and technical occupations, lies a substantial set of behaviors which can be taught, described, and are remarkably stable. It is this stable structure which should be carefully considered by educators.

Figure One, "A Set of Stable Behaviors in an Unstable Technical Society," illustrates the relatively fixed nature of technical and professional work methodology.

Figure One: A Set of Stable Behaviors in an Unstable Technical Society



The model centers on the occupational team which society has already created to fulfill its professional, technical and vocational objectives. The four-level occupational team which has become increasingly typical of modern business, government, and industry, reflects the complexity of the current world of work. Today, educational training is required for entrance into appropriate job families. Thus, there are jobs requiring four or more years of college education, jobs requiring some college education, and jobs requiring a high school education. While there still are jobs with fewer educational requirements, these are relatively few and swiftly declining in number. The comprehensive high school must recognize its responsibility in the post-high school preparation of all children. The figure highlights this concern by focusing on the multi-faceted nature of the high school in juxtaposition to the traditional college-prep/non-college prep dichotomy.

Figure One shows that the stable behaviors consist of at least twelve observable, definable, and teachable stages. Even though the stages are listed in numerical order, it should not be assumed that they will necessarily be found or taught in this order. Indeed, experience has shown that any stage may be entered with subsequent work encompassing the other stages in any order which happens to be appropriate. For the purposes of description, the stages will be presented in numerical order.

Stage 1 is a data procurement stage. Here, data in the form of receipts, measures, physical samples and the like are secured for or by the pupils either from experiments which were conducted or which they conduct, or from natural situations such as receipts from an ongoing business, or soil samples from a civil engineer.

The next stage is data observation. Pupils take the data which was secured from experiments or from natural sources and perform certain observations upon these data. Their observations may take a natural form -- that is, they may use their physical senses, or the observation may be aided through the use of a variety of instruments. The instrumenting of observations can be simple or magnificently complete and can form highly instructive and motivating instructional experience.

The third stage is data recording. Pupils observe the data and then record what they have observed. Here again, the data may be recorded in a "natural" way -- that is, using a simple pencil and paper, or the process of recording can be highly instrumented, affording productive areas of instruction and motivation.

The fourth stage is concerned with data organization. Pupils learn to tabulate, graph, and use mathematical insights in the form of tables, simple statistics, and so forth. The object of this stage is to prepare the data which was recorded in a useable form for the subsequent stages. It is entirely possible that data may be recorded in a prearranged organizational pattern.

The fifth stage logically follows the fourth or organizational stage, and consists of data interpretation with the reporting of the interpretation. In this stage, the pupil needs skill in technical writing.

In the sixth stage, higher mental functioning is required, the pupil must make value judgments about data, and consider decisions which might be made on the basis of the report and the evaluation. Stage VI, then, represents the critical phase of the entire data processing experience. It is entitled data evaluation and decision making.

Stage VII -- social sciences, economics and philosophy -- represent the contributions of the social science curriculum to the pupil for his use in making decisions and judgments required in Stage VI. It can be readily shown that in a free society the nature of decisions will differ from that of an unfree society. The crucial point here is that data in themselves are amoral. The morality is brought in from sources outside of the technical experience.

The VIII stage refers to the whole area of finance which must come into play once decisions are reached if an enterprise is to function.

Stages IX, X, XI, and XII respectively, describing management and production, sales and advertising, transportation and logistics, accounting and analysis, logically flow from plans to utilize the decisions made on the basis of an evaluation of data

It may be helpful at this point to describe two examples to show the stability of work method in a variety of different and changing fields. Pupils may be given soil samples secured from civil engineers preparing to build a housing project. The pupils can observe the soil samples using chemical and mechanical procedures, record what they observe, organize, interpret and report their findings and make judgments regarding the suitability of that soil for supporting the buildings. Their decisions will be influenced by economic facts such as site preparation costs, methods of financing, and so forth. In the medical field, students may take blood samples from animals; observe, record, organize, interpret and report their findings; and render judgments based on conditions laid down in the original experiment. For example, the problem might be concerned with diet or routine, etc. Again, decisions will be influenced by considerations arising from stages VII through XII.

The conceptual approach lends itself both to the segregation of pupils for the purpose of instruction and to the integration of pupils for their daily work. Tasks may be formulated which are educationally relevant, requiring specialization of some and integration of all. Thus, pupils may be at work on a problem which has in it elements illustrating the concept of friction. Some pupils will be able to operate with the notion of friction as a mathematical construct. Others will take from the experiment the notion of friction as force. Still others will only be able to conceive of friction as heat. In the educationally relevant task, the possibility of enhancing the dignity of all in the work world may be moved forward and the fruits of specialized instruction also be realized.

A further use of such a conceptualization as described here lies in the area of guidance. Data and problems arise from a multitude of job families. In the process of learning to handle data, pupils gain experience, not only as practitioners in the job families, but gain an impression of the jobs themselves.

It is easy to visualize that what has been described is but the first plank in a sequential educational program. The second plank might well consist of the establish-

ment of specialized laboratories in each school where pupils can behave as practitioners and render useful service to the school as well as to themselves. For example, schools might develop a physiology laboratory, a human potentials laboratory, a materials selection laboratory, etc. Pupils could take the skills and knowledges which they have gained through an understanding of the twelve stages described in Figure One and apply them to real situations which exist in the school. For example, using a table of random numbers, a small group of students from the physical education program might be brought into the physiology lab, manned by pupils, and given physiological tests which will expose physical fitness. Again, in the human potentials lab, pupils might experiment with optimal ways of improving memory, study skills, and the like. In the materials selection lab, products to be purchased by the Board of Trustees might be subject to analysis and decisions rendered to the administration and Board about the desirability of purchase. This kind of program could lead to a third plank in which pupils who have served in the specialized labs could be given an opportunity to gain work experience in actual laboratories that exist in the community.

In summary, what is described above is an applied scientific method. Whereas the world of work is in a constant state of flux, some important aspects of the basic work method have not changed. Were we to provide youth with the knowledge and skill described, we would have made a major contribution to their post-high school success. Young people handling data and problems from the "real world" as well as from carefully contrived experiments representative of jobs and major job families would not only gain familiarity and competence in the applied scientific method, and a familiarity with a whole host of professional, technical, and vocational jobs, but would actually experience the behavior of a person in an engineering job, or as a hospital technician, a market analyst, or a mechanic. It can also be seen that properly implemented, this concept framework can serve as a vehicle by which mathematics, science, English, and social science may be strengthened. The kind of

program described above can be most readily carried out as a two or three hour core program utilizing team teaching. In this way, pupils involved in the program would not be denied opportunities in general education.

Professional, technical and vocational education must be viewed as a whole to become a unified movement in the direction of training for our complex world. All our programs at all levels -- and there are many levels of job opportunity deriving from scientific and technological developments -- show direct relationship to scientific and technological cluster fields.

While the functions and levels of responsibility will differ markedly, all jobs in the future will require a degree of comprehension that transcends the merely manipulative. Comprehension must begin at the administrative level, then permeate the teaching level and finally belong to all the American men and women.

Comprehension on the part of administrators and teachers must include excellent understanding of the nature of technical, professional and vocational occupations, the requirements of the specialized fields and a keen awareness of the shifting nature of the world of work. Our goal must be to supply that manpower that can secure the economic and social goals of this great nation.

*Lessinger, Leon, Educational Stability in an Unstable Technical Society. California Journal of Secondary Education, March, 1965.

BIBLIOGRAPHY

Melvin L. Barlow, *History of Industrial Education in the United States*, Charles A. Bennett Co., Inc., Peoria, Illinois, 1967

Melvin L. Barlow, *The Philosophy for Quality Vocational Education Programs*, 4th Yearbook of the American Vocational Association, the AMERICAN VOCATIONAL ASSOCIATION, INC., Washington, D.C., 1974

Carl Lamar, *A state director's response to the Comptroller's Report*, American Vocational Association Journal, April, 1975

Leon Lessinger, *Educational Stability in an Unstable Technical Society*, California Journal of Secondary Education, March, 1965.

Robert A. Mullen, excerpts from a talk given to the Winston-Salem Marketing Executives on September 8, 1970.

Kenneth J. Rabben, *GAO Report on Voc Ed Stirs Controversy*, American Vocational Association Journal, March, 1975

Calvin M. Woodward, *Manual Training in Education*, (New York: Scribner and Welford), 1890

Calvin M. Woodward, *The Manual Training School*, Boston: D. C. Heath and Company, 1887.

Arthur Wirth, *The Vocational-Liberal Studies Controversy Between John Dewey and Others*, St. Louis, Missouri, September, 1970